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ORIGINAL LECTURES.

AMPUTATION OF A "TAPIROID" CERVIX. ENUCLEATION OF A UTERINE FIBROID.

A Clinical Lecture
delivered at the Hospital of the University of Pennsylvania.

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GENTLEMEN: I have not seen this patient before, but I have learned the facts of her history from Dr. Taylor, who tells me that she has had five labors—all instrumental, and at all of which the child was born dead. The trouble about which she consults me to-day is an enlargement of the cervix, which protrudes from her body whenever she stands on her feet, and which she takes to be the prolapsed womb. She is, however, wrong in this surmise. The real cause of her trouble is, that in some one of her labors she has received a stellate laceration of the cervix, two of the three tears passing one on each side of the anterior lip, and the third tear passing through the posterior lip, so that the os is divided into three parts. From the congestion set up by this constant irritation there has resulted an unusual hypertrophy of each one of these parts, which is most marked in the anterior. This is five inches long, and it so strikingly resembles the male organ in a state of erection, that a woman with this misfortune might seem to the ignorant to be an hermaphrodite. The elongations of these divisions of the cervix bear a resemblance to the tapir's snout, whence the origin of the expression tapiroid cervix.

What I purpose to do to-day is to amputate this enormous cervix at a point above the cicatricial tissue of the tears. The chief dangers in this operation are penetration of the bladder anteriorly, which would cause a vesico-vaginal fistula, and cutting into Douglas's *cul-de-sac* behind and thus possibly causing peritonitis. In order to guard against the former accident, I pass the sound into the bladder and thoroughly define the vesical limits. Having thus settled where the bladder ends, I penetrate the cervix just below it with a needle armed with a stout thread. By this thread I have the cervix and womb completely under my control.

I now begin my amputation, and soon find to my chagrin that I have penetrated Douglas's *cul-de-sac*. I say to my chagrin, not because it is a serious mishap in these days of antisepsis, but because no surgeon likes to find that his knife has gone where he did not intend it to go. It is not the fear of the result to the patient that makes me chagrined, but the pardonable vanity of a surgeon. Closing this opening with two fine sutures, I resume the operation and in a few moments have the cervix removed. I shall carefully preserve it, as it is the best example I have ever seen of a tapiroid cervix. As there will be a subsequent tendency to stenosis, I dilate the cervical canal, and, while I am operating on the next patient, Dr. Taylor will complete the operation by coaptating the mucous edge of the circumference of the cervical wound to the mucous edge of the external os by sutures radiating from the latter. In other words, he will, by sutures resembling the spokes of a wheel, approximate the tire of this raw cervical wheel to the edge of its hub. These sutures will not be touched for at least two weeks. During that time the object of lessening uterine congestion and cervical elongation will be attained, not only by actual shortening from the operation, but also by retrograde metamorphosis caused both by the repair of an open sore and by the seton-like action of each suture.

ENUCLEATION OF A UTERINE FIBROID.

I began this operation ten days ago before a ward-class, and I shall try to finish it to-day in your presence. In fact, it might be said that I began it two weeks ago, as I shall explain in the course of my lecture. The woman is thirty-two years old, married for fourteen years, but sterile from a large uterine fibroid of the variety known as soft myoma, reaching up above the umbilicus. She is slowly being killed by the hæmorrhages and by her sufferings. What is to be done with it? The tumor is growing rapidly, and, if left to nature, it will carry off this woman within a year. How shall it be removed? Its position is neither on the outside of the uterus (subperitoneal), nor within the uterine cavity (submucous), but within the very uterine wall itself (interstitial). It is situated in the right wall of the womb; it has grown to a size larger than that of the adult head, and it has pushed the uterine cavity before it to the left. The sound penetrated five inches, showing that the uterine cavity had been enlarged, but not in proportion to the size of the tumor. When I first examined it, the cervix had become obliterated by pressure, and the lower uterine zone was bulging into the vagina. The *os uteri* readily admitted the finger. There was milk in the breasts, and the tumor, which is soft and gives a false sense of fluctuation, was very naturally mistaken for pregnancy by more than one physician.

I debated in my mind what was best to be done. If I made an abdominal section I should find it difficult to get a pedicle for the cervix is effaced. On the other hand, the tumor was evidently trying to escape *per vaginam*. So I decided to aid its efforts in that direction. Accordingly, with scissors, I incised the cervix in various directions to enlarge it, and then cut open the capsule of the presenting portion of the tumor with Adams's subcutaneous saw. I used the saw, both because the wound made by it is jagged, and does not bleed so much as a clean cut; and because the linear motion of the saw takes up far less room than the open blades of the scissors. With my finger I then stripped off the capsule from the tumor as far as I could reach.

Ergot was given in decided doses with the hope that the uterine contractions would force the tumor out. But,

while the tumor did protrude in a measure and slowly enlarged both the *os uteri* and the opening into the capsule, it was not a success, for necrosis of the fibroid took place, the discharges became excessively fetid, and septic symptoms set in. So I brought her before a ward-class and removed piecemeal, and with much difficulty, about half of the tumor. The fragments were not weighed, but I should say they must have amounted to five pounds. The best instruments for this purpose are the obsolete guarded obstetric crotchet forceps and a very large and heavy pair of fenestrated polypus forceps. I have performed this operation many times. In one it took five sittings before a very large tumor was removed, and the stench from the portion left behind at each sitting was very great, yet by dint of intra-uterine injections of corrosive sublimate the patient recovered. By the use of the same antiseptic measures our patient of to-day has progressed very well, and is in good condition for the operation of enucleation, by which I hope to remove the remaining half. The lower portion of the tumor has become rotten from being denuded and from the injuries it sustained at the last operation.

I twist off fragment after fragment with the fenestrated forceps. The rotten portion has now been wholly removed, and I introduce the guarded obstetric forceps. With this I tear up the living portion and again remove some fragments with the polypus forceps. Occasionally the parts are irrigated with a 1 : 2000 solution of corrosive sublimate.

I was in hopes to get all the tumor away at this sitting, but the woman's pulse is becoming too frequent and feeble. These signs, whenever a patient is under ether, mean danger—danger here from shock, not from loss of blood, which has not amounted to much. So I shall have to leave the rest of this tumor for another sitting. I therefore syringe out with vinegar the large cavity in the wall of the womb and also the uterine cavity. This will stop all bleeding. I next most thoroughly wash out the same cavities with the sublimate solution, taking care that none of it remains behind to poison the patient.

To save our patient from blood-poisoning, to which she is liable from the fetid discharges which will assuredly come from the rotting tumor, I shall have the cavity syringed out twice or even three times a day with a 1 : 4000 solution, telling the nurse to press the perineum backward after each cleansing, so that none of the solution may lodge in the curve of the vagina. I would rather have our patient run the risk of mercurialization than the risk of septic infection. When she has fully recovered from the shock of to-day's operation I shall remove the remainder of the tumor.

NOTE.—At the next clinic Dr. Goodell informed the class that this patient rallied well from the operation, and was seen in an apparently excellent condition by the resident physician in his last round at ten o'clock of the night of the operation. Twenty minutes later he was summoned to find her dead. It was evidently a case of heart-clot formed during the repeated operations, and Dr. Goodell expressed the regret that he had not removed the tumor by abdominal section. He said that in that case he would have formed his pedicle from the uterine shell left after the enucleation of the tumor.

ORIGINAL ARTICLES.

THE LABYRINTH OF THE EAR.[1]

BY B. ALEX. RANDALL, A.M., M.D.,
PROFESSOR OF DISEASES OF THE EAR IN THE PHILADELPHIA POLYCLINIC; OPHTHALMIC AND AURAL SURGEON TO THE EPISCOPAL AND CHILDREN'S HOSPITALS.

ONLY some forty years ago, as the treatment of diseases of the ear began to receive some attention from medical men, one of the greatest German authorities used to ascribe a very large proportion of his cases of impaired hearing—more than one-half—to "nervous deafness." Further study has shown that such a diagnosis was akin to that of "amaurosis" in eye disease, and comprehended numerous forms of unknown trouble, later recognized as distinct and unrelated; and the tendency to exclude such terms, as being mere cloaks of ignorance, went too far in explaining away such views. To-day more scientific methods enable us to determine with far greater accuracy whether a lesion of the nervous portion of the apparatus exists or not; and there is promise of notable development, not only in the diagnosis, but also in the therapeusis, of affections of the internal ear. In asking attention, therefore, to the anatomy of the labyrinth, it is not merely that we may study an exquisitely complex apparatus and marvel over its beauties, but that we may endeavor to grasp what is known of its structure and of its functions, and utilize this knowledge to the present benefit of humanity and the further advance of otology.

The internal ear of man is a marvellously delicate and complicated apparatus, walled in by bone of stony hardness, and offering considerable difficulties to the investigations of the anatomist; but thanks to the many modern methods of investigating it, the task is becoming easier. Its normal anatomy, embryology, and physiology are fairly well understood, and its pathology is advancing with every year. The student can find good descriptions of it in the text-books, and can readily memorize them for examination requirements; but since the actual dissection of the organ of hearing is rather infrequent, even among aurists, a working knowledge of its anatomy is by no means commonly retained, and the need of reiteration of the most elementary details is very evident to one who endeavors to teach otology. This is my excuse for going over ground already well trodden.

The internal ear, or labyrinth, consists of three principal parts—the vestibule, the semicircular canals, and the cochlea—and is the seat of the termination of the fibres of the acoustic nerve. Some points in its physiology are not yet determined, but

[1] The substance of a lantern-lecture delivered at the Philadelphia Polyclinic, April 15, 1890.

the anatomy has been elaborately studied in almost every detail, and its exquisitely complex arrangement clearly revealed. Here the waves of the atmosphere which we call sound are received after passing through the external and middle ear, and here these impulses are transmuted into nervous force and passed on to the centres of hearing in the brain. If we consider that the ear has to take cognizance of vibrations of very varying length, comprising not less than eleven octaves—twelve times as wide a range as the spectrum-scale of the eye—it will be evident that the mechanical arrangement must be very complete; and the marvel is that it should have been so thoroughly discovered and studied.

The generally accepted view which designates the labyrinth as the *receiving* apparatus, in contrast to the *conducting* apparatus external to it, has abundant practical and theoretical foundation. Anatomical points mark a total change as we pass from the tympanum to the inner ear. Air-cavities, most curiously contrived, make up the external and middle ear; but in the labyrinth all the cavities are filled with fluid. Further, there is a most singular doubling of the labyrinthine structures—a membranous labyrinth floats within a bony capsule, which repeats in most respects, but in larger dimensions, the configuration of its several parts. As the bony labyrinth has long been known, and its rigid shape seemed to give and maintain the form of the membranous labyrinth, the latter has generally been described as moulded within the osseous walls; in fact, however, the membranous structure is developed first, and is far advanced in its growth before its capsule begins to take shape or undergo ossification. In point of time, therefore, the beautiful bony capsule is secondary; and investigation shows that its importance is also secondary to that of the delicate structure within. To this, then, let us first give attention.

The membranous labyrinth originates as a pouch from the ectodermal surface, and, separating early, it forms an independent spherical sac, the otic vesicle. This vesicle differentiates by the outgrowth of tubular processes, the first of which, growing inward and backward, forms the endolymphatic duct, while three processes bud out from the posterior portion to curve through the surrounding tissues and return again, constituting the semi-circular canals. From the lower anterior portion a single tubule grows forward to wind spirally inward and form the cochlear canal. Nerve-fibres from the posterior cerebral vesicle early unite the otic vesicle and the group of ganglion cells pertaining to the cochlea to the central nervous system; and the mesoblastic tissues differentiate about the developing otic vesicle to form the supporting structures of the labyrinth. An inner layer contributes a close-fitting sheath to the epithelial tissues, while an outer layer, separated by the developing perilymphatic spaces, forms the outer capsule, which becomes, later, the bony labyrinth. The endolymphatic structure of epiblastic tissue sheathed by a delicate mesoblastic layer forms, then, the membranous labyrinth. As fully developed this consists of the cochlear canal anteriorly, the semicircular canals posteriorly, and the vestibular sacs, the saccule and utricle, between them; the cochlear canal communicating by a narrow *canalis reuniens* with the saccule, the semicircular canals opening into the utricle, and these two distinct sacs communicating with the membranous vestibular

FIG. 1.

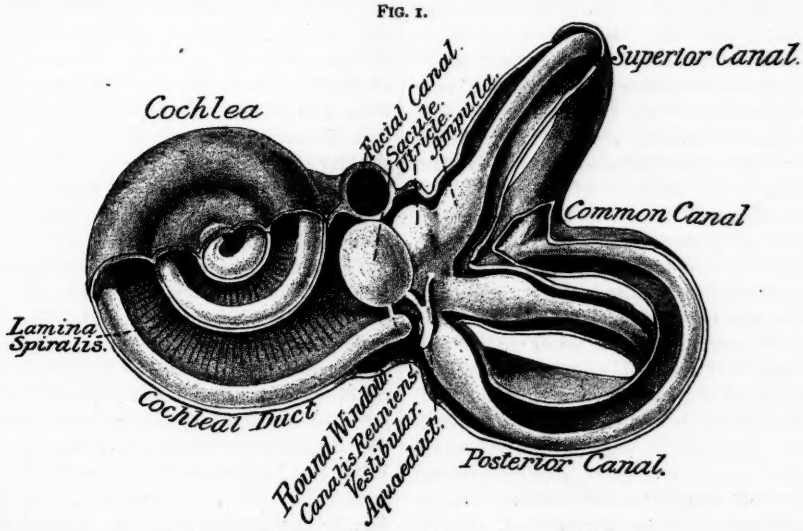


Diagram of the membranous, within the bony, labyrinth.

aqueduct, which thus furnishes an indirect union. The relations of these several parts are clearly shown in the diagram.

The cochleal canal consists of a tube, triangular in section, which winds spirally inward and upward for about two and three-fourths turns from its blind cæcal extremity in the vestibule to its blind end in the apex of the cochlea. Throughout its length it is abundantly supplied with fibres of the acoustic nerve, and its minuter structure shows most elaborate differentiation. Even in the infant, the accessory apparatus of the cochleal capsule and axis obscures its primary simplicity; and as these have bearing upon its function, further study of it may be deferred until these parts have been considered.

The semicircular canals at the posterior extremity of the membranous labyrinth show at almost all stages their peculiar character. They are three C-shaped tubes arising from the utricle and occupying planes almost exactly at right angles to each other—one horizontal, one transversely vertical (frontal), and one longitudinally vertical (sagittal). While the vertical canal may be most conveniently designated in accordance with the cranial sutures with which they nearly correspond in direction, it should be noted that the axes of the pyramids of the temporal bones converge strongly forward, and that it is really in relation to these axes that the canals are transverse and longitudinal. Each canal consists of a cylindrical tube 0.5 mm. in diameter, which broadens at one end into a pear-shaped ampulla 1.5 mm. wide before joining the utricle, while the other end joins it with little widening. The ampullæ of the frontal and horizontal canals are close together above, while that of the sagittal or posterior canal is below. The simple end of the horizontal canal is but little to the median side of its ampulla, while the undilated extremities of the two vertical canals unite into a common trunk before joining the upper median portion of the utricle. Each canal consists of a delicate hyaloid tube lined with flattened epithelium, and, except in the ampulla, is destitute of acoustic nerve-supply or of differentiation suggestive of important function. Each ampulla, however, receives a special nerve-trunk which supplies a differentiated area of terminal apparatus, a *crista acoustica* of cylinder epithelium carrying stiff hairs which extend out to the middle of its lumen. This acoustic crest extends across the side of the ampulla continuous with the convex wall of the canal, where a deep furrow, into which the nerve enters, indents the pyriform sac. Above the hair-like cilia of each crest floats a delicate gelatinous membrane.

The *utricle*, or larger vestibular sac, with which the semicircular canals connect, is of irregular, rather crescentic form, its greatest length of 5.5 mm. being up and forward from the mouth of the ampulla of the posterior canal. It receives the five extremities of the semicircular canals principally on its posterior wall, while from its anterior surface a narrow tube joins the endolymphatic duct. Its convex anterior wall is in contact with the adjacent saccule and the connective tissue here binds them closely together, but without communication of lumen or fusion of their walls. The smaller sac, or *saccule*, is of a slightly flattened elliptical shape, and communicates by two narrow tubules with the other portions of the endolymphatic cavity—the one below being the *canalis reuniens*, which connects it with the lower end of the cochleal duct; the other, one of the Y-like arms of the endolymphatic duct. Each of the vestibular sacs consists of a delicate fibrous membrane lined with epithelium and receives a branch of the acoustic nerve, which terminates in a differentiated area of its wall, the *macula acoustica*. In structure these are similar to those in the ampullæ, but are less prominent, with smaller hairs projecting from the nervous epithelium, and with the gelatinous layer overlying them enclosing numerous crystals of lime—the otoliths. The last constituent of the membranous labyrinth is the endolymphatic duct, or membranous vestibular aqueduct, which is really one of the first portions to differentiate from the otic vesicle, and is well developed when the other divisions are only appearing. It becomes narrowed off from the vestibular sacs until the connection is but a narrow, forked tube, while its blind extremity expands into a flattened sac between the layers of the dura in the cranial cavity. Such, then, is the membranous labyrinth: the result of the growth and differentiation of the otic vesicle, reinforced by a layer of mesoblastic tissue.

The mesoblastic tissues surrounding the otic vesicle form three layers, of which the inmost ensheathes that structure as stated. The outer layer undergoes chondrification as a preliminary to the ossification which converts it into the bony labyrinth, while the intermediate tissue is hollowed out into spaces which intervene at most points between the two structures and are filled with the perilymph. While this fluid separates the membranous labyrinth at most points from its capsule, and it may, therefore, be said to float within its protecting structures, it is, in fact, firmly anchored throughout its extent. The convexities of the tubular portions and one side of each of the sacs adhere to the capsule and the structure occupies an eccentric position.

The bony labyrinth, or capsule, is a structure formed about the fully developed membranous labyrinth and conforming to its size and shape, except in so far as it is held away from it by the intervening lymph-spaces. It consists of the osseous cochlea, vestibule, and semicircular canals and the narrow aqueduct of the vestibule, and as the cribriform bot-

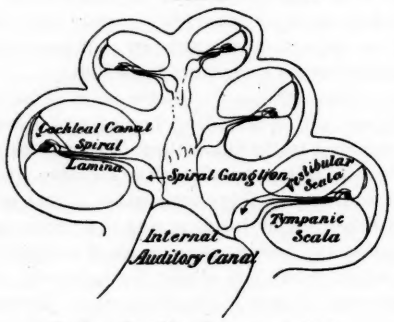
tom of the internal auditory meatus forms a part of its median wall, this meatus is often reckoned with it as part of the internal ear. The bony semicircular canals correspond closely with the membranous tubes which they surround, but are three times as wide (1.5 : 0.5 mm.), the lymph-space being in the concavity of the turn, while the membranous tube is attached to the convexity. They present distinct ampullar enlargements, yet these are but little larger than the contained sacs (2 : 1.5 mm.). The bony vestibule is much simpler in form than its contents, and presents but a single cavity with depressions upon its median wall corresponding to the points of attachment of the sacs. One of these is quite distinctly marked, and by its hemispherical shape indicates that it lodges the rounded saccule; another furnishes a bed for the irregular utricle, while a third receives the cæcal commencement of the cochleal duct. The bony cochlea closely resembles the snail-shell, from which it takes its name, and consists of a tube arising from the lower anterior part of the vestibule to pass forward and wind its narrowing coil two and a half times around a conical axis. The membranous tube, as in the semicircular canals, clings to the convexity of its turns, and the remainder of its lumen is divided by a shelf of bone projecting from the axis—the spiral lamina—into two distinct perilymphatic spaces. The upper of these is a direct continuation of the cavity of the vestibule and is called the vestibular scala; the lower is shut off from the vestibule by the attachments of the cochleal duct, but communicates with the tympanum by means of the round window and is hence called the tympanic scala. This opening of the round window is occupied by the secondary tympanic membrane, so the tympanic scala is closed at its lower extremity; and while free communication is generally supposed to exist at the apex of the cochlea, there is reason to doubt if this is true. The round window, with its membrane, is simply an unossified portion of the bony labyrinth. The membrane is so tightly stretched inward that it can yield little to pressure from the tympanum, while it can yield to the pressure from within; and it may probably be regarded as a mere safety-valve for the cochleal tension. There is another window into the labyrinth, however, which is far more important—the oval window of the vestibule, which is occupied by the foot-plate of the stapes. The slight, piston-like movements which this last of the chain of ossicles makes in response to vibrations communicated to the tympanic membrane find their parallel in all well-differentiated ears, and interference with them at once lowers or abolishes the perception of aërial vibration, as sounds can then be heard only by bone-conduction. Everything in the normal and pathological study points to the great mechanical importance of this window; and we are learning that if this be filled with an elastic structure hearing may still be useful, even if all the ossicles are lost and the conducting apparatus is a mere wreck. The margins of this window are covered with cartilage and articulate with the similarly covered edge of the stapes-base, while the entire inner surface is covered with the delicate periosteum. Quite a space—the *cisterna perilymphatica*—intervenes between the stapes and the membranous labyrinth, so that the vibrations imparted to the perilymph are transmitted about as freely to all portions of the auditory apparatus as to the saccule which lies just opposite. It is noteworthy, as Rüdinger points out, that the acoustic area of the saccule is on the far side of that sac and with its hairs directed toward the stapes-base, while that of the utricle is upon its nearer anterior wall and with its hair-cells directed away from the stapes.

Here, then, is the usual entrance-point of the vibrations given off by sounding bodies, and from this point we must try to follow them if we wish to grasp their method of transmission. The impulses given by the stapes-base probably affect, first of all, the saccule and utricle close at hand, setting the perilymph in undulation and causing movements of the gelatinous mass which floats just above the hair-cells of the acoustic area of each of these two sacs. The stimulation of these nerve-cells, conveyed as nerve-force to the cranial centres, gives rise to quantitative impressions of noise. But no mechanical arrangement is here seen suggesting a perception of the quality or pitch of the sound or sounds—only differences of loudness or faintness distinguish one from another. So, too, the examination of the other areas having acoustic nerve-supply—the acoustic crests in the ampullæ—shows no such differentiated structure. These nerve-cells may have a quantitative hearing function or they may serve merely as indicators of the motion of the perilymph in the semicircular canals occasioned by the movements or the position of the head. In the latter case, like the visible bubble of a spirit-level, they afford the constant suggestions of the position of the head so essential to equilibrium.

It is in the cochlea, therefore, that we must look for the apparatus of qualitative hearing, and the marvellous complexity of the structure here found accords well with such a function. We have spoken of the cochleal canal as a triangularly compressed tube rising in spiral turns around the axial cone of the cochlea and having a perilymphatic space on each side which accompanies it in its windings. A section longitudinally through the conical bony axis shows this and more. We see that the modiolus or osseous cone is hollow, and its multitude of small channels are practically continuous with the internal auditory meatus and transmit, piecemeal, the bun-

dles of nerve-filaments into which the cochleal branch of the acoustic nerve separates at the cribriform plate. These bundles turn at right angles to the axis of the cochlea to pass out between the two plates of bone constituting the osseous spiral lamina. On their way they pass through a ganglion mass of cells which appears round on section, but in reality is cylindrical and winds spirally upward parallel to the cochleal duct. The bony spiral lamina which projects out to meet the nearest angle of the cochleal canal has a continuation to the opposite wall of the capsule afforded by the basal or tympanic side of this canal—hence, often called the membranous

FIG. 2.



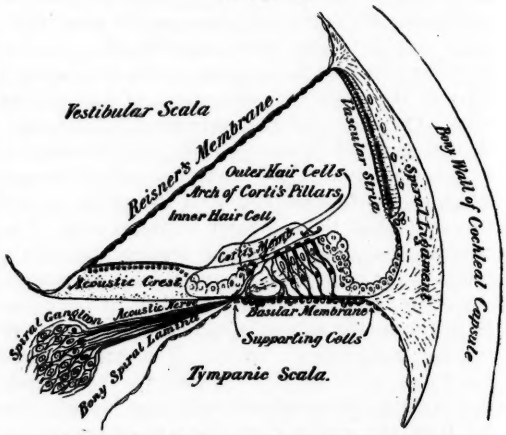
Section of cochlea, from apex to base.

spiral lamina—which expands into a crescentic cushion of fibrous tissue to form its insertion upon the outer wall. This spiral ligament consists of fibrous bands, practically continuous with the strong fibrous tissue of the membranous spiral lamina or basilar membrane, radiating from its outer extremity (to which the name spiral ligament is sometimes restricted) and blending with the periosteum of the capsular wall. The curious point is clearly shown in such a section that while the bony spiral lamina becomes shorter, and almost every other element of the apparatus decreases in size toward the apex of the cochlea, the membranous spiral lamina, or basilar membrane, grows longer. Beginning with a length[1] of less than 0.05 mm., it increases rapidly to some 0.2 mm. in the middle of the first cochleal turn, is full 0.3 mm. in the second turn, and about 0.4 mm. near the apex (0.495 mm., Hensen). As minuter study shows this membrane to be formed of a series of parallel fibrous cords, we reach the important fact that the cochlea possesses a system of cords of greatly varying length stretched tightly across from the firm bony shelf toward the opposite wall and comparable to the strings of a harp or piano, except that their number is estimated at from 13,000 to 24,000.

[1] This dimension is more strictly the breadth, if we consider the basilar membrane in its entirety and not in section, as here seen. Its length, from apex to vestibule, is nearly 35 mm.

The natural assumption of the great importance of such an arrangement is strengthened by further study of the minute anatomy of the organ, for a highly differentiated structure, forming the nervous end-apparatus, rests upon this basilar membrane. The organ of Corti, as this is called, consists of arches formed of stiff pillars, which support series of columnar cells provided with hairs and receiving the terminal nerve-fibrils—the "hearing-cells." There is a single row of these to the inner and three to five rows to the outer side of the tunnel formed by the unbroken series of arches, and all are but-

FIG. 3.



Section of cochleal canal, showing Corti's organ.

tressed by complicated sets of what are generally called supporting cells. The pillars arise from broad bases upon the basilar membrane and converge to form the arches, their enlarged heads being compressed to form close, regular articulations, while expansions from these reach outward as a network through the meshes of which the hair-cells protrude. Much that is curious and beautiful in the structure of Corti's organ must be passed over in silence, while we consider only its more essential parts. The hearing-cells are crowned, as has been said, by tufts of hairs or stiff cilia, shorter and much more numerous than those of the somewhat similar hair-cells of the vestibular sacs, and to these cells have been traced the ultimate nerve-fibrils which leave their medullary sheaths in the bony lamina spiralis and emerge through small openings at the bases of the inner pillars. Evidently, then, these hair-cells are the nervous end-apparatus. Above Corti's organ lies a thick gelatinous membrane, comparable to those which float above the hair-cells in the vestibular sacs, except that it lacks otoliths; and while its function is uncertain, it is doubtless important, if we may judge from its development before the differentiation of the adjacent parts. It extends out-

ward from a fibrous crest which rises from the bony shelf; but its other end, which is generally free, has been described as fastened either to the outer part of Corti's organ or to the projection on the external wall opposite to it (Deiters). It is not known, then, whether it floats free or is fast at both ends and stretched across above the hair-cells, nor whether it normally rests in contact with these or is slightly separated from them. Whether it acts as a damper to check vibration or as a point of impact for the excitation of the hair-cells is not clear, but the latter seems more probable.

The cochleal canal consists, then, of a triangular tube whose epithelial layer has been variously modified from its primitive simplicity; while its mesoblastic sheath retains its undifferentiated character only in its upper wall or Reissner's membrane; the acoustic crest, the basilar membrane, and the crescentic spiral ligament representing the remainder of its extent.

Some idea of the function of the cochlea must be apparent from these details of structure. In the series of tightly stretched cords of the basilar membrane we have the mechanically receptive elements, each attuned to a certain wave-length and responding whenever such vibrations are transmitted by the labyrinthine fluids. The longest of these cords are in the apex of the cochlea and these are tuned for the lowest tones for which the ear is adapted—about fifteen vibrations to the second. The shortest cords are at the beginning of the first turn and some of them are probably attuned to higher tones, with shorter wave-lengths, than the conducting mechanism of the ear will generally convey. Blake has shown that tones of 80,000 or more vibrations, generally inaudible, can be heard when a perforation in the tympanic membrane admits the vibrating air direct to the windows of the labyrinth. The limits of the audible scale vary in different ears and so do the maxima and minima lengths of the basilar fibres, according to the most accurate measurements. Pathology confirms this relation of the different parts of the cochlea to these different tones; and deafness for low notes has been shown to be associated with lesions in the apex, while deafness for high tones has marked the cases with lesions about the base.

Complex as is the construction of Corti's organ, the function of its parts is largely secondary, for in birds they are lacking. The arches formed by the pillars probably serve as weights to tune the underlying cords to the proper pitch or as bridge-points between which the cord is free to vibrate. As confirming the latter view, it is noteworthy that the pillars increase in length regularly from base to apex (the inner 48–70 μ, the outer 62–103 μ) and the span of the arch grows from 48 to 90 μ. In the basilar membrane, therefore, there are present cords fitted to vibrate to any tone which is transmitted to them, and to communicate this movement to the terminal nerve-cells which rest upon them. These nerve-cells are somewhat less numerous, the inner hair-cells being about one to seven of the cords, and the outer hair-cells, in their three or four rows, only about four times as numerous as the inner, yet their placing is such that doubtless every pair of cords is in special relation to a hair-cell. Of the least numerous inner hair-cells there are about 300 for every octave of the musical scale, or 40 for each tone; and experiment has shown that intervals of $\frac{1}{64}$ of a tone are the minutest distinguishable by the human ear. Just as in the retina the limits of visual acuity are dependent upon the size of the cones and their closeness together, so in the ear the acuteness of acoustic perception depends upon the similar relations of the hearing-cells. Some details of structure and function have not yet been fully decided for either organ, but enough is known to show a most interesting parallelism and to furnish us with many resting-points for working hypotheses. Physiological and pathological students are busy with these matters, testing, correcting, and expanding these hypotheses; and every year is adding to the power of the aurist to differentiate the various diseases heretofore confounded in clinical work and thus to locate and combat them.

GYNECOLOGICAL ELECTRO-THERAPEUTICS.

BY HORATIO R. BIGELOW, M.D.

MY reason for continuing the discussion of a subject already nearly threadbare from excess of wear and tear, and sadly handicapped by the amount of the personal equation, is to be found in the very readable article of Dr. Baldy which appeared in this journal of March 22d. Dr. Baldy writes as a thoroughly equipped surgeon, speaking from ripe experience, and drawing his inferences from a careful weighing of his own excellent record, as well as from a patient examination of the work of others. His paper may be received as the type of polemic argument of most other surgeons who occupy themselves with abdominal surgery. In his chosen field he is so far ahead of me, his personal experience so much greater, and his knowledge of it so much more absolute that I have no right to gainsay him when he speaks as an operative surgeon. Moreover, the article he has published is well written, logical, and not without much truth. If it hits us who believe in electricity rather hard, the punishment is healthful and was deserved. I should like once more to place on record my own views in regard to gynecological electro-therapeutics, detailing its merits, its dangers, and its shortcomings. To do this at all fairly the word of any professional brother who has carved out

for himself recognized standing must be accepted without the shadow of a doubt, whether he be electrician or surgeon; and no man may consider himself a more accomplished diagnostician than his equally intelligent neighbor, since it would be a matter of much difficulty to find two men who would agree upon any given point. Experience, training, and study give us all a right to deferential hearing, and anyone who has encompassed these prerequisites may demand a respectful consideration of his theories. The diagnosis of A. may be diametrically opposed to that of B., but if both of them are well trained in their profession the opinion of the one is quite as valuable as that of the other. If A. be a surgeon skilled in the field of the abdomen and B. a good, thorough-going gynecologist, A. can have no possible right to conceive that the knowledge he gains by looking into the cut he has made, and which he applies in formulating a diagnosis before beginning the operation, is any more accurate than the conclusion which B. reaches with an educated sense of touch and a knowledge of pathological processes. I have seen and felt hundreds of diseased tubes from *above*, but I do not believe that it is at all necessary in arriving at a diagnosis; and as compared with the sense of touch which grows out of the examination of hundreds of women, and with a knowledge of pathological processes learned in the dead-house, it amounts to nothing. A ripe observation of the work of some of the best abdominal surgeons in the world, a constant association with Continental men for several years, has convinced me that the surgeon often arrives at a *just* diagnosis only after he has opened the woman's abdomen. So, upon questions of diagnosis, I would feel more inclined to agree with B. than A., though in the argument I should consider them both of equal value.

Clinical Testimony and Actual Experiment.—In a very just criticism of my book which appeared in the *Lancet*, November 2, 1889, the writer says:

> "The methods of electricity are fully explained, but at the present date it is not too much to expect some proof of the effects of electricity on living tissues. While discussions of this subject seem to occupy much time in societies, facts are conspicuous by their absence. Before statements as to the effects of electricity on the uterus, fibroids, etc., can be properly discussed we ought to be able to read some accounts of actual experiments on fibroid and other tumors on the external and accessible regions of the body. That so much clinical statement should at this time exist side by side with so little scientific research seems to us to be a reproach to all who claim to erect electro-therapeutics into a great curative system."

It *is* a reproach to us, and my critic strikes the keynote. We can never hope for a rational, systematic, and scientific system of electro-therapeutics unless we go to work with our sleeves tucked up and furnish to the inquiring mind of the surgeon the *how* and the *why* of these things. If we are to do anything in the future with electricity we must go backward and learn the A B C of its alphabet. If a galvanic current will diminish a myoma we must be able to demonstrate *how* it does so, and not content ourselves with mere guesswork. It is not enough to cite clinical evidence of its power, we must add to this a demonstration of the actual processes at work. I feel very keenly our shortcomings in this particular, and I am mortified at my own inability to furnish immediately the proof.

My Own Experience.—Only because some of my critics persist in attributing to me claims which I have *never* urged for electricity—accusing me of viewing it as a panacea, etc., mistakes, I take it, which have arisen from a superficial reading of what I have written, do I deem it necessary to reiterate:

1. That I have *never* seen a myoma anatomically cured.

2. There are some myomas which should never be electrically handled.

3. I have *never* seen a pyo- or hydro-salpinx anatomically cured.

4. There are many of these cases which should never be electrically handled.

5. Dr. Apostoli, my master, has *never* claimed in his writings that he cured these cases anatomically.

6. I have *never* denied the possibility of accident and bad results. It would be exceedingly strange if such did not occur.

What I do claim:

1. Myomas may be *symptomatically* cured, and this permanently.

2. Myomas may be reduced in size.

3. Some conditions of salpingo-ovaritis may be *symptomatically* cured.

4. Cases of exudates may be relieved of all painful symptoms. I am not ready to say that they are anatomically cured.

5. Endometritis and metritis are *always* satisfactorily treated by electricity.

6. Malpositions of the uterus are well treated by electricity.

7. Ovarian pain may be cured by its use.

Such is my own experience. Others advance larger claims, and since these emanate from honorable men I am as justified in receiving them as valuable statistics as I would be in receiving the statistics of any surgeon. One man's statistics are just as valuable as those of another.

Question of Cost.—This is a lame argument—very lame indeed. Any man, with a little expenditure of time and ingenuity, can make a battery for himself for ten or fifteen dollars. The whole armamentarium need not cost him within one hundred dollars as much as do the tools of the full-fledged,

ambitious abdominal surgeon. The *cost to the patient* generally is much less under electricity, at least I should think so, when I hear of women paying one thousand dollars and the charges of a private hospital to be rid of an ovarian tumor. It seems to me this whole affair is one of the individual and does not admit of discussion.

Bad results have happened, undoubtedly, and are happening daily. Chadwick's cases—too bad that these things should be so bruited about, for the notoriety is unfortunate—are fondly quoted by surgeons daily. But I wonder how many deaths happened in the early days of abdominal surgery, and how many are still happening of which we know nothing. If the argument holds good for electricity, how much more seriously must it apply to abdominal surgery. How are the young surgeons of the day to win their spurs, if not through a mortifying experience of bad results. In the Rue du Jour I have *never* seen a bad result, and I soon shall have been nearly a year in attendance upon Apostoli's clinic. In fact there has not been even an alarming symptom since I have been associated with Dr. Apostoli. This is due, I think,

1st. To accurate diagnosis.

2d. To an intelligent differentiating of the treatment required.

3d. To a *thorough knowledge of the subject.*

4th. To thorough preliminary precautions.

5th. To never attempting to accomplish too much.

Of course, as the subject enlarges and draws to itself new disciples and new patients, want of experience will have its train of mourners, both in electricity and in surgery. It may go without saying that many men are much more competent to practise electricity than others, and I still believe that even a brilliant abdominal surgeon would not have flattering results from electricity, simply because it is not his *mêtier*, and his training has not been such as to make him a master of the subject. The same argument will hold good of the electrician attempting the practice of abdominal surgery. I do not find that many bad results ever occur in the practices of competent persons. The popularity of electricity is its greatest danger. It will be practised by people who know little or nothing about it, who even do not know one current from another; so it is bound to suffer. It is a mistake to suppose that anyone can take it up after reading a text-book. It is a mistake for the surgeon to condemn it because of his own bad results, because, I say it with all politeness, I do not believe that many of them have given it the careful study that it requires. Another danger to us is that of claiming too much. We should recognize that electricity is not a panacea; that the cures are not *always* permanent; that many cases should *never* be treated, and *that no case should be over-treated.* There will always arrive a time in the handling of a myoma, when treatment should be suspended for months, otherwise we will be sure to have inflammatory symptoms. Puncturing should be performed by the best men only, and I am not at all sure that I am fond of it, although I have seen some marvellous results in Apostoli's hands. There will always be a certain contingent of danger, but I do not believe that bad results will ever follow the handiwork of the honest, competent man who knows what cases to treat and which not to treat; who makes haste slowly; who does not expect to work a miracle, and who will claim for his work only that which rightly belongs to it.

Dr. Baldy's objections are:

1st. The treatment must be a local one and must be given by the physician himself.

Answer. An evident argument in its favor.

2d. The apparatus is too expensive for any but a specialist to possess.

Answer. Only a specialist, and he a competent one, should possess it.

3d. The patient must submit to a prolonged vaginal manipulation several times a week, sometimes for months.

Answer. No vaginal manipulation necessary. Speculum is *never* used. Sound and electrodes introduced by sense of touch.

4th. It is necessary to remove a great part of the woman's clothing in order to administer the treatment properly and thoroughly.

Answer. No exposure whatever. It can all be done under cover. But what does this objection amount to when opposed to the exposure that a woman undergoes upon the operating table of the surgeon?

Diagnosis.—If we analyze carefully these disputes over points of diagnosis we will find them usually matters of individual unpleasantness, and not of scientific moment. Much writing has succeeded in complicating intelligent diagnosis to a wonderful degree. These things that follow I hold to be absolutely necessary:

1. Careful study in the dead house.

2. Careful attendance upon clinics, especially watching the condition of affairs from above.

3. Careful study of specimens.

4. A large experience in the examination of women.

These facts fresh in our minds, generally speaking, diagnoses are not difficult. Rare cases occur in which the diagnosis requires much care, and even then may be doubtful. It is scarcely modest to dispute the diagnosis of men as eminent as ourselves, because their hobby is not the one that we ride, because this presupposes an assumption of superior

knowledge. Neither do I at all concede that because a man has opened the abdomen a hundred or more times that thereby he is better qualified to render an intelligent opinion. The great features of pelvic disease are readily recognizable. Myomas, as a rule, are made out, mapped out, and located without much trouble. Intra-ligamentous growths and encysted exudates are sometimes troublesome. Backward displacements of the uterus, with or without a myomatous complication, and ectopic gestations, may give rise to doubt. But if we have our anatomy fresh in our minds; if we know, so to speak, and that by heart, the "lay of the land," the refinements of modern text-books are simply embarrassing, and a little mental picture of the relations of the parts will help us toward a solution. In a recent article in the *Annals of Gynæcology and Pædiatry*, Dr. Cushing says: "Keith has recently published the histories of over one hundred cases of myoma, or what he diagnoses as such," etc. Now, if Keith, with an exceptional experience, is not competent to make out a myoma, is there a man among us who can claim such distinction? When Keith reports his one hundred cases and the results of his treatment; when he says that they were myomas, I certainly should be as fully justified in accepting this statement as fact as I would be in accepting as fact Dr. Cushing's own opinions. Neither have we the least right to "analyze" Keith's position simply because, as an honest man, and in the face of personal abuse, he has had the courage to give up a line of treatment in which he had unequalled success, and to take hold of another plan, which in his hands has given him better results. Why praise him for the work he did as a surgeon, and then damn him with faint praise for equally good work as an electro-gynecologist? Out of one hundred cases reported by him, one died from the effects of the treatment. Out of one hundred cases treated by the abdominal surgeon how many die? Can any responsible gynecologist for one moment believe that Keith would mistake a "subinvoluted uterus with metrorrhagia" for a myoma? And is anyone so omniscient as to hazard a diagnosis with any assurance of certainty upon merely reading the history of a case? There has been much useless writing about this whole matter of diagnosis. If the electrician happens to have success, up jumps the surgeon, and says that his diagnosis must have been bad, simply because the struggling brother has been able to put a few hardly earned pennies in his pocket; and then he proceeds to surround this myoma, or this salpingitis, with such an aggregation of adhesions, he so buries it in omentum and intestine, he so overlays it with bladder, and so complicates it with peradventures and sophisms, that the whole college would be put to their wit's end to know what really ailed the woman. I would like very much to know how many hundreds of tubes and ovaries have been extirpated by surgeons who previously diagnosed pathological change, but which failed to reveal such changes under the microscope after they had been taken out. I have seen many operators, in many climes, but I have never seen a more careful nor a better diagnostician than Apostoli, and I believe his experience in myomas to be as large, if not larger, than that of any other living man. So, when Apostoli asserts that such and such was the case, I should believe him without question.

Chronic Pelvic Inflammatory Diseases.—Dr. Baldy's article is concerned solely with this form of pelvic disorder. It may be objected to my list of disorders in which I believed electricity to be beneficial, that I had confined it within very narrow limits. But in stating my belief that it would cure endometritis and metritis I cover a wide territory, since the endometrium is the *fons et origo* of a vast number of diseases that are propagated by contiguity of structure to organs more remote. The chief symptoms—the most troublesome ones, the only ones for which a woman consults us who suffers from the conditions referred to—are pain during menstruation, coition, walking, and defecation, and a general sense of malaise. I *know* that electricity will dissipate all these pains, and while I do not believe that it will cure the case thoroughly in its anatomical relations—I am speaking now of the old chronic forms—yet it does cause some degree of absorption. Some cases that were treated nine months ago, receiving only a few *séances*, have not felt obliged to return so far for renewed treatment. Electricity finds here one of its most important and valuable fields, and its success will admit of no question. I have much more faith in its powers here than I have in the absorption of myomas. Now, if it will so thoroughly cure the case symptomatically, that the woman will not be conscious that there is anything anatomically wrong about her, why disturb the afternoon siesta of the surgeon? A disease is known to the patient and to us by its symptoms; hence, for our purpose, if the symptoms be cured, the disease does not exist. The surgeon does not do even as well as this by operating, for he does not always cure the symptoms, and he has mutilated his patient. Anyone of ripe experience can remember many cases in which bad reflex neuroses have followed after an abdominal section. Electricity will do vastly more for a woman with chronic pelvic trouble than the surgeon can with his knife. If Dr. Goelet says that he has dissipated these adhesions, I cannot conceive why we should not accept his statement, although clothed in poetic language. The science must go forward or backward, it cannot stand still, and improvements will be made upon

Apostoli's plan by his disciples as experience and knowledge increase. So that it is most probable that you will have more extended results in America than here, because there are more workers, and it would be surprising if these men should not accomplish more than is done in the Rue de Jour. I have not seen a case of chronic adhesions absolutely cured anatomically, but I am quite ready to believe that it is possible. There is much more that I would like to say, but reserve it for a future occasion, perhaps. The possibilities of electricity are great. What is needed is original work in regard to its action.

PARIS, April 16.

GASTRO-ENTEROSTOMY AND PYLORECTOMY.

BY H. TUHOLSKE, M.D.,
PROFESSOR OF SURGICAL PATHOLOGY AND CLINICAL SURGERY IN THE MISSOURI MEDICAL COLLEGE, CONSULTING SURGEON TO THE ST. LOUIS CITY HOSPITAL, SURGEON TO THE ST. LOUIS POLYCLINIC AND HOSPITAL, ETC.

IN the beginning of October, 1889, I took charge of the case of O'N., a mechanic, aged thirty years, whom I had seen in consultation about five weeks previous.

History.—Of healthy parentage, the patient had enjoyed fair health until two years ago, when, he claimed, he contracted syphilis, and had a primary sore on the penis, which, two months later, was followed by mucous patches in the mouth and throat. There were no other demonstrable lesions. He was treated with mercury and potassium iodide. In the spring of 1889 the first symptoms of stomach trouble appeared. Patient would vomit, without much nausea, without any pain, and at irregular intervals, large quantities of fluid. Vomiting was usually followed by shorter or longer periods of comparative comfort. Treatment yielded no results to speak of, and on the recommendation of his medical attendant the patient tried a change of climate. Gradually losing in weight, he dragged on through the summer, and returned to his home in the latter part of September. It was then that I saw him in consultation and diagnosed an obstructive trouble at or about the pylorus. Toward the end of October I took sole charge of him, and found the following conditions: Height of patient, 6 feet 2 inches; weight, 118 pounds; emaciated to an extreme degree, the hands presenting the wrinkled, brawny appearance of starvation. Physical examination revealed nothing abnormal in the lungs or heart; no disturbance referable to the urinary apparatus; nervous system fairly normal; intellect bright and clear; abdomen flat, even sunken at the lower part; the epigastrium was prominent. The contour of the stomach was easily demonstrated, the greater curvature, beginning in the right hypochondriac region, passed through the epigastric region, reaching its lowest point two inches above the umbilicus, and, ascending gradually, filled the median half of the left hypochondriac region. Peristalsis visible through the parietes; no enlarged glands in the inguinal or supra-clavicular regions; no tumor. Patient was extremely weak, as he had been living on nutrient enemata for sixteen days, only small quantities of water having been occasionally administered by the mouth. Even then vomiting occurred every forty-eight hours. Bowels were obstinately constipated.

Diagnosis.—Pyloric obstruction and great dilatation of the stomach. Under the careful administration of beef-juices and peptonized milk by the stomach, patient gained somewhat and was able to sit up in bed, but vomiting occurred whenever the stomach became full. Nevertheless, he rallied so that after two weeks I felt justified in ordering washing out of the stomach to be performed every other day. Finally, my assistant, Dr. Perkins, reported that the long-suspected tumor could be felt low down in the right hypochondrium. I then informed the patient of the necessity of operative interference and urged a gastro-enterostomy. Under the washing-out treatment, however, he was improving wonderfully, and gained some twenty pounds during December, and returned to work in January. He would not entertain my proposition for the operation. The improvement was of short duration, and by the end of the month he was again in a state of great debility and emaciation, and, while lending a more willing ear to my proposal, insisted on trying the efficacy of the Hot Springs in Arkansas.

For a time he improved and sent glowing reports, but returned home March 25th almost dead. He now clamored for an operation. Rectal feeding and stimulants revived him somewhat, and on the 29th, at 9 A.M., with the patient in a miserable condition, after having washed out the stomach and bowels, I proceeded to operate, with the assistance of Drs. Carson, Brokaw, and the clinical staff.

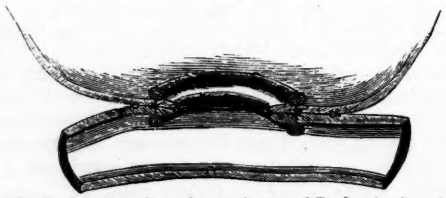
Operation.—The incision, four inches in length, was made over the site of the tumor. The centre of the incision was two inches to the right of and on a level with the umbilicus and upon an imaginary line drawn from the centre of Poupart's ligament to the cartilage of the right ninth rib. The peritoneum was opened to the same extent, after having stopped all bleeding. I found the pylorus at once, presenting in the wound, without adhesions, freely movable, and about the size of a walnut. Considering the extremely weak condition of the patient, I had determined first to make the gastro-enterostomy, and, if the patient seemed able to bear it, then to resect the pylorus.

But a short time is required for a gastro-enterostomy with our improved technique. The introduction by Senn of decalcified bone apposition-plates marks an era in abdominal surgery. I have had the privilege of seeing him use the plates in an experimental operation upon a dog. Like most great devices, it is exceedingly simple. But for the difficulty of procuring the plates, and of proper size, when needed, their use would become universal. This difficulty has, however, been completely overcome by Dr. Brokaw's ingenious substitute. The segmented rubber ring (see THE MEDICAL NEWS, December 7, 1889,) can be rapidly made and of any

size, of a strand of catgut or a piece of rubber tubing. A ring composed of four or six segments is most readily applied, and, quoting Dr. Brokaw, is used as follows: "Compress the ring, pass it into the lumen of the bowel or stomach through the opening previously made, pass the threads at the end of the oval first, through the intestinal wall from within outward, then the lateral threads; make slight traction to ascertain whether the ring rests well in place, and proceed to the second. Apply this in the same manner, appose, and tie the apposition threads, after scarification of the marginal serous surfaces, as suggested by Senn."

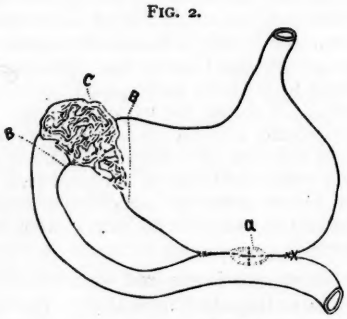
I now drew the stomach out of the cavity, covered and surrounded it with warm sponges, found the beginning of the jejunum without difficulty, brought it forward until it was above the middle of the great curvature of the stomach, and emptied the contents from about three inches, and placed the clamps in position. I then made an incision an inch in length on the convex border, compressed a segmented ring two inches in diameter into a long ovoid,

FIG. 1.



Longitudinal section through openings and Brokaw's rings in a gastro-enterostomy.

FIG. 2.

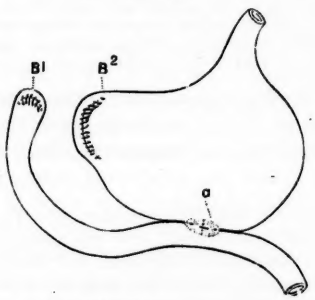


A. Anastomosis complete.
B B. Lines of excision.
C. Malignant growth.

introduced it into the gut, and passed the needles armed with fine, strong silk thread. A corresponding incision was then made in the stomach at the point indicated; a similar ring introduced, and the needles passed close to the ring at its outer circumference. I then secured the openings in both stomach and gut by interrupted sutures, tied the apposition threads, and completed the anastomosis by the addition of eight Lembert sutures surrounding the anastomosis.

The second step of the operation—the pylorectomy—then became comparatively simple. I separated the great omentum along the greater curvature and the gastro-hepatic along the lesser curvature of the stomach by cutting between double ligatures, as suggested by Billroth. I then applied clamps some distance from each side of the growth, and resected with the scissors. Then, an assistant holding the duodenum with the clamp, I passed a number of interrupted sutures, completely closing the bowel; then removed the clamp, invaginated the bowel, and secured broad peritoneal contact by interrupted Lembert sutures, closely applied. The stomach-wound was closed in the same manner.

FIG. 3.



A. Anastomosis.
B^1. Closed end of duodenum.
B^2. Closed pyloric end of stomach.

Three enlarged glands were removed with the omentum. The bleeding was slight. No stomach or bowel contents escaped into the cavity. After a careful toilet of the peritoneum I closed the parietal wound in the usual manner. Patient had a number of sinking spells, and whiskey and digitalis had to be administered frequently during the operation, which was completed in one hour and forty-five minutes. He seemed to react from the operation; there was no vomiting, and the intellect remained clear and calm. Pulse varied from 120 to 140 per minute. He complained greatly of pain and thirst during the day, the latter being relieved by warm-water enemata. During the night he constantly grew weaker, and died twenty-six hours after the operation. Microscopic examination proved the tumor to be epithelioma.

Remarks.—In attempting to gauge the merits of the various surgical procedures advised for the relief or cure of pyloric obstructions we at once meet with an all-important obstacle, viz., the limited number of reported cases. We find, therefore, not only great diversity of opinion on the subject, but diametrically opposed statements from the most illustrious in the profession. Some high authorities, who put before us the results of closest investigation, speak most discouragingly and doubt the propriety of the performance of pylorectomy.

In Mr. Greig Smith's classical work on *Abdominal Surgery*, page 392, we read:

"With these results before us, we must admit that if pylorectomy is to be considered anything more than a 'mere surgical exercise,' it is to be contemplated only in a very carefully selected class of cases. If the patient is not in fairly good condition, if the stomach is greatly dilated, if the growth is large, fixed and displaced, the operation should not be contemplated. And even when the opposite conditions are present it is doubtful if it could ever be a surgeon's duty to advise the operation; he ought to undertake it only at the patient's urgent request, and after fully and honestly explaining to him the hazardous risk which he undergoes."

The inadequacy of the statistics on the subject may be readily appreciated by reading from the section on the surgery of the abdomen by Mears in the *Annual of the Universal Medical Sciences* for 1889, page 25.

Professor Buchanan, with regard to the propriety of performing the operation in carcinoma, quotes the opinions of Butlin, and of Billroth, as given by his assistant Salzer. The former says:

"The excessive mortality due to the operation, the rapidity of recurrence in what have appeared to be most favorable cases for operation, the return of the symptoms of obstruction in some, if not in many, of the cases, and the fact that there does not appear to be one case which can be claimed as a genuine cure, lead me to doubt whether the operation of resection of the pylorus for cancer is ever a justifiable operation."

Salzer states that

"Billroth does not only consider the operation of resection of the stomach a justifiable one, but he continues operating with good results in many cases. Of course, he does not operate in cases of carcinoma if there are already infiltrations and adhesions to the liver and pancreas. In these cases he prefers Woelfler's operation of gastro-enterostomy."

Mikulicz, of Cracow, collected thirty-two cases, of which only eight recovered from the effects of the operation.

The unfavorable results which have so far attended this operation may probably be attributed to the following causes, of which some may be classed as unavoidable, others as avoidable. First, and most important, the mutilation of an organ of such paramount importance; and secondly, the injury of greater or less extent inflicted on the sympathetic nervous ganglia. The former might cause a marantic condition later on; the latter, severe and fatal shock. Future statistics will determine the importance of these factors. Among other prominent causes are the long duration of the operation, lasting, in the hands of even the masters of the technique, three hours or more; imperfect sewing; an extensive separation of the omentum, producing gangrene of the colon; the numerous causes of sepsis, such as the escape of stomach- or bowel-contents into the peritoneal cavity. It is unnecessary to say, that the careful selection of cases is, *cæteris paribus*, of prime importance. The patient upon whom I operated presented locally the most desirable, constitutionally the most undesirable condition. At last, almost *in extremis*, pleading for the operation, I performed one which I claim has some decided advantages over those heretofore in vogue. The first step, the gastro-enterostomy, made in the manner described, probably does away with two important factors of failure, for it requires but little time, and fairly guarantees complete apposition and closure. In the future, with a very weak patient, I would defer the pylorectomy for two or three weeks. With the patient in an improved condition, this form of pylorectomy would appear less hazardous. Whenever a pylorectomy is indicated, gastro-enterostomy, followed by the resection of the pylorus, as described, appears the shorter, the more complete, the more secure, so far as closure is concerned, hence the better operation. When done for carcinoma, even if there is recurrence, obstruction, which causes the most disturbing symptom, would be prevented. But carcinoma of the pylorus, although the most frequent, is not the only cause of obstruction; simple stricture, external adhesions, and the pressure of a tumor may produce similar symptoms. An early and exact diagnosis, therefore, is of vast importance. I believe that just as soon as dilatation of the stomach, due to obstruction at the pylorus, has been diagnosed, it is eminently proper, with the consent of the patient, to make an exploratory laparotomy, and to examine the pylorus; if the cause of the obstruction be found in adhesions which can be severed, to sever them; or, if that be not feasible, to make a gastro-enterostomy with the apposition rings.

If due to a tumor which cannot be removed the same should be done. If the disease is confined to the pylorus, it is proper to open the stomach at a place convenient for a gastro-enterostomy, to introduce the finger through the opening and into the pylorus. If a simple stricture is found we should proceed according to Loreta, dilate, and close the opening in the stomach. If the obstruction is due to carcinoma, the opening should be used for a gastro-enterostomy, and the pylorus resected as suggested.

I hazard the opinion that operations for obstruction at the pylorus will yield better results in the future. We will operate upon patients in fairly good conditions and we will find large pyloric carcinomata with extensive adhesions as rarely as we now find very large stones in the bladder or huge ovarian tumors—such condition being diagnosed early and removed.

In conclusion I would mention, that after a number of experiments upon dogs, Dr. Brokaw, of St. Louis, found the segmented rubber ring of great

value in circular pylorectomy. After resection, a segmented rubber ring is introduced into the cut extremity of the duodenum, the apposition threads passed through the intestinal walls one-half to three-fourths of an inch from the free edge. The stomach is then sutured, beginning at the lesser curvature, reducing the opening until it exactly corresponds to the diameter of the duodenum. Through the opening in the stomach a segmented rubber ring is now introduced, the needles are passed and the operation finished as in any other anastomosis. I believe that this method may find its uses in non-malignant obstructive strictures of the pylorus. For the carcinomatous obstruction, I think the operation which I have devised is preferable.[1]

THE HODGEN SUSPENSION-SPLINT.

BY H. H. MUDD, M.D.,
OF ST. LOUIS, MO.

THE chief reliance of physicians in the treatment of fractures of the femur appears to be upon Buck's extension, but with this method the necessary movements of the patient, the irregularities of the bed, with consequent difficulty in adjusting the padding, or the carelessness of the surgeon, not infrequently result in over-lapping or in "angling," with a resulting crooked and shortened bone. The after-care of a case treated in a properly adjusted Hodgen splint is so trifling, compared with that required by Buck's method, that I am tempted again to present the claims of the suspension-splint of Dr. John T. Hodgen. Surgeons use with Buck's extension from twelve to twenty pounds pull, and shortened legs attest its inefficiency. The comparatively perfect result to be obtained by the judicious use of a Hodgen suspension-splint is not, I believe, to be attained with any other method, and the amount of the extending pull need not exceed ten pounds.

Extension is so universally admitted to be of prime importance in the treatment of the fractured femur that I shall not here endeavor to prove its value, nor do I deem this the place to compare and discuss the relative merits of the various procedures resorted to in the effort to secure equable and continuous extension. Many and various are the methods devised. A description of Hodgen's suspension-splint is found in many of the text-books. Few authors, however, seem to appreciate fully the benefits to be derived from suspension and extension as combined in this splint; yet its use is certainly becoming widely extended, though rather by example than by force of authority. It is a splint which will win its way into favor by its own virtues after it is once understood by surgeons of mechanical tact. I hope, since the splint is simple in its construction and theory, to make its application and principles so plain that every surgeon can use it with comfort and advantage to his patient.

Simple and effective continuous extension was, I think, first obtained in oblique suspension by Nathan R. Smith, when he introduced his anterior splint, of which the Hodgen suspension-splint is a modification. The advantages of the Hodgen splint are:

1. Easy adjustment.
2. It leaves the thigh exposed to inspection.
3. The muslin supports on which the leg and thigh rest can be separately adjusted, so that the tension on any one of them can be easily changed.

This splint in the hands of an expert secures nearly perfect immobilization, with extension so equable and effective as to give practically perfect results; and the freedom of motion allowed the patient does not interfere with the union of the broken bone—the splint and leg move with the body of the patient. The only motion is at the hip-joint, and there is no possibility of angling at the fractured point by the dragging of the leg on the bed as the patient moves from one side to the other. The patient can sit upright in bed or use the bed-pan without disturbing the fracture.

Description.—The splint itself, as originally devised, is composed of a single piece of No. 2 wire, bent as shown in Fig. 1. The sliding hooks D D′ and E E′ are used for attaching the suspending cords to the splint. The use of the arch O is to maintain the proper width of the splint at its upper end, viz., 8 or 10 inches. This arch is loose and is easily slipped into position over the ends of the wire which form the splint before the latter is applied to the leg. The width of the splint at the foot is about 5 inches, and is determined by the bend in the wire which forms the body of the splint. The wire hooks E E′ and D D′ present at one end a free loop for the attachment of the supporting cords, while the other end is coiled somewhat snugly around the lateral bars of the splint at D and E. The lateral bars extend upward on each side of the leg, so that the two ends of the wire reach, the one to a point *above the pubes*, and the other, on the outside, *nearly to the crest of the ilium.* The bend of the splint at the knee permits slight flexion of the leg.

The distance from the foot of the splint to the bend in the knee is 22 inches. From the bend at the knee to the upper end of the splint is 20 inches. The suspending apparatus is composed of, first, the pulley A, which is fixed in a high framework extending 8 feet above the bed, or preferably, in the ceiling; secondly, of the perforated sliding block B and the cord B A C; thirdly, of the two cords D C E and D′ C E′, of equal length with a loop at each end for attachment to the wire hooks at D D′ and E E′. These cords are passed through

[1] Since writing the above I have read with pleasure that the same operation has been performed successfully by the eminent surgeon, Dr. Bull, of New York, on April 10th.

a loop in the cord B A C at its end C. The suspension of the leg and splint is readily accomplished by sliding downward the block B on the cord B A C. The amount of the extension is determined by the degree of obliquity of the cord B A C. It is transmitted from the splint to the leg through the adhesive strip H, which, extending from one tuberosity

FIG. 1.

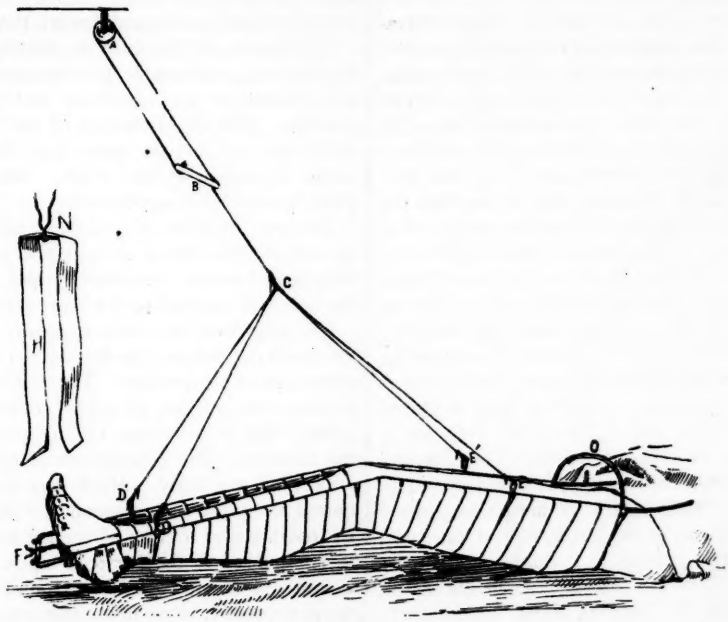
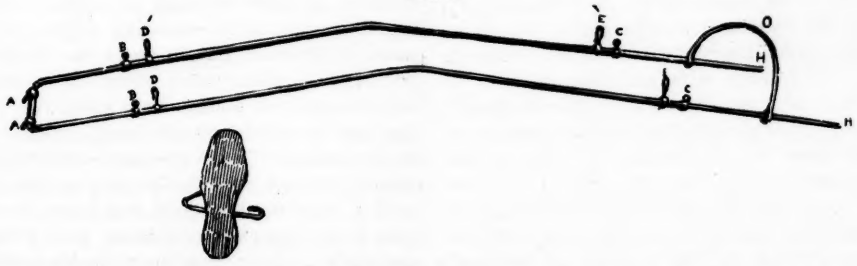


FIG. 2.



of the tibia to the other across the board N at the sole of the foot, is fastened by a cord to the cross-bar at F, and thus securely holds the leg in the splint.

The splint, as represented in Fig. 1, is the simple solid-wire splint, as above described, and is readily made by any blacksmith.

In Fig. 2 an adjustable splint, easily fitted to any leg, long or short, is shown. It is composed of hollow tubes and sliding-bars, as described below. The lateral bars B C are square tubes, furnished with thumb-screws at their extremities, B and C. These tubes are of sufficient size to admit the terminal ends of the lateral bars, and by pushing in or pulling out the extremities of the lateral arms the length of the splint may be varied. Its width can also be changed by sliding the lateral arms into the hollow tube A A, which is furnished with thumb-screws at A and A. The hooks D D′ and E E′, for suspending the splint, slide on the lateral bars B C, but should be kept near the end of the hollow tubes B C. The splint is used in the same manner as the one before described.

Fig. 1 shows the splint in use. The leg is resting on muslin strips, which pass under it. These are secured by pins at each end, after overlapping the arms D E and D′ E′ of the splint. Each strip supports its proportion of the weight of the leg. These strips extend from the heel to the gluteal fold. The adhesive strip H (Fig. 1), softened by warmth or by turpentine, is applied to the leg, and secured in

position by a roller, which extends as high as the knee. This strip secures the leg in the splint, since it is fastened by the cord and block N to the foot of the splint at F. The block N, at the sole of the foot, should be as wide as the adhesive strip, and about three and one-half inches long. It then protects the malleoli from the lateral pressure of the adhesive strip, through which the extending force is applied.

The Suspension of the Leg and the Adjustment of the Fracture.—The application of the Hodgen suspension-splint is simple, and in skilful hands painless. Suppose the leg, with its fractured femur, to be resting upon the bed. The adhesive strip H, with its foot-piece and cord, is placed in position, an assistant grasps the foot with one hand, and, with the other hand under the knee, lifts the leg from the bed, while at the same time he makes steady extension of the femur. The surgeon then applies the roller as high as the knee-joint, binding the adhesive plaster to the leg. The leg is again allowed to rest upon the bed, but the assistant maintains moderate traction on the foot, so as not to relax the extending force applied to the fractured bone. The splint is then put into position. A lateral arm is placed upon either side of the leg, and the cross-bar is brought close to the sole of the foot. The cord and block N, with the adhesive strip, is now fastened to the foot of the splint. Strips of muslin are passed under the leg—one at the ankle, one at the knee, and perhaps two under the thigh. These are secured by pins to the lateral arms of the splint, while it is held so that the inner arm extends above the pubes, and its outer arm, reaching nearly to the crest of the ilium, has its upper extremity not far from the anterior-superior spine of the ilium. The lower end of the splint is on a level with the malleoli. The inner wire arm may need to be shortened or bent upward, so as to give the patient opportunity to sit upright, but it should always extend well above the pubic bone. The leg can now be suspended by attaching the cords D C E and D′ C E′, and adjusting the slide B so as to lift the splint and leg from the bed. The cradle of cloth strips upon which the leg is to rest is now made complete by adding strips of muslin, and adjusting them to the outline of the leg, as indicated in the cut. No special or violent attempt at the adjustment of the fractured bone is made, except where there is marked lateral displacement, as in some transverse fractures. The free swing of the leg, and the efficiency of the extending force, secure a perfect adjustment in a few hours. The fracture "sets" itself.

The flexion of the leg on the thigh should not be very sharp, for if the bend approaches a right angle the elevation of the knee is necessarily great and most of the extending force applied to the thigh would be through the muslin strips on which the upper part of the leg rests (those just at and below the bend of the knee). The angle of flexion at the knee may be varied from that of the splint by lengthening or shortening the strips which support the thigh. The foot may be elevated or lowered and the support rendered by the muslin strips under the thigh varied, by sliding the loop at C downward toward the foot or upward toward the groin.

The flexion of the knee is only sufficient to put the leg in a comfortable position, relaxing slightly the tension of the hamstring and gastrocnemius muscles. The slight flexion of the thigh on the pelvis puts at rest the psoas and iliacus, and the rectus extensor of the thigh. The muscles are placed in a state of equilibrium.

External rotation, if it occurs, can be obviated by securing the foot to a foot-piece, or by a muslin strip passed around the outer border of the ball of the foot and fastened to the inner arm of the splint.

The degree of extension necessary to accomplish the result desired may be determined in part by the sensations of the patient. The position of comfort is often the position of safety, as extension is required only to overcome the tonic contraction of the muscles. The counter-extending force is the weight of the body. Much less extension is required in splints that suspend the leg and remove the resistance of friction of the leg on the bed than is required when the leg rests upon the bed, and weight and friction are first to be overcome. It is never necessary, when using this splint in an adult, to apply (as recommended by Hamilton when speaking of other methods of making extension) twenty pounds as an extending weight; or, as he states in his work on *Fractures and Dislocations*, published in 1880, "one pound for a child one year of age, two pounds for a child two years of age, and so on, adding one pound for each year up to the twentieth." An extension of twenty pounds, applied through an adhesive strip to the leg, and pulling upon the knee-joint and femur, is a serious trial to the patient's endurance, and it taxes the surgeon's ingenuity to maintain steadily such a force.

The amount of extension required in this suspension-splint is much less, being only from three to ten pounds, for there is no friction to overcome, and so long as the patient remains in bed there is no appreciable variation in the extending force provided the point of support is eight or ten feet above the plane of the bed. It is a quiet, persistent, non-irritating and effective pull. There is no perineal band to fret and worry the patient. The extending force is determined by two factors, and these are entirely within the control of the surgeon, viz., the obliquity of the extending cord and the

weight suspended. The first can be varied by the relative position of the bed and the suspending pulley, and the latter can be increased, if desired, by placing sand-bags across the lateral bars of the splint.

It seems difficult for some persons to understand how extension can be applied to a fractured thigh by a direct traction upon the leg, without counter-extension through the perineal band. They fail to recognize the efficiency of the weight of the leg as an extending force and the stability of the body as a counter-extending force. The amount of the extending force that is transmitted through the adhesive strip in the suspension-splint, may be measured by substituting a spring balance for the cord, which in the cut connects the block N with the foot of the splint. A small portion of the extending force is, however, transmitted through the strips which support the limb in its cradle, and those who wish can, by mathematical formulæ, compute the absolute amount of the extending force obtained by oblique suspension.

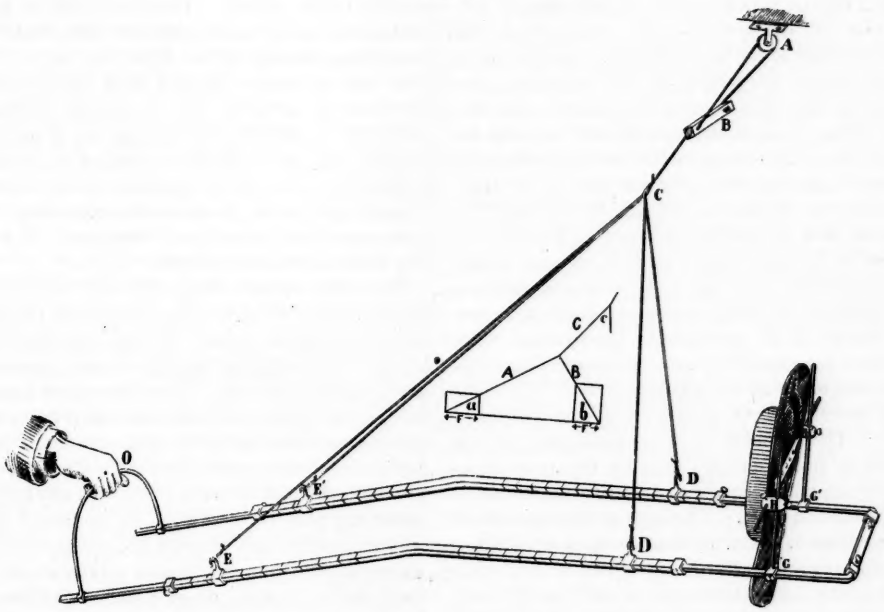
Professor Francis E. Nipher, of the Washington University, and Dr. A. K. Worthington, now of Denver, used the following formulæ for determining the extending force. The line D in the diagram (Fig. 3) represents, approximately, the line of the splint and the femur.

The pull on the cords C E and C E′ and also on C D and C D′ (Fig. 3), can be accurately measured. The angles a and b (see Diagram, Fig. 3) can also be measured. The traction force along C E and C E′ is represented by A, and that along C D and C D′ (Fig. 3) by B. The forces A and B being known as also the angles a and b, we can readily calculate the horizontal components F and F′.

The resultant of F and F′ will represent the direct traction force exerted along the line D, or the amount of efficient extension applied in the line of the femur.

In a particular case where the patient weighed 150 pounds, and the suspending cord, C (or in Fig. 3, A B C) formed an angle of 15° with the perpendicular:

FIG. 3.



It was found that the pull	A = 11.5 pounds.
And the pull	B = 10.5 "
The angle	a = 40°
The angle	b = 75°.
Hence by trigonometry	F = A cos. a.
And	F′ = B cos. b.
Whence by substitution	F = 11.5 x cos. 40 = 8.8 pounds.
" " "	F′ = 10.5 x cos. 75 = 2 7 "
Therefore the resultant of	F and F′ = 6 1 pounds.

F and F′ act in different, opposing directions, hence their resultant is the difference between them, or 6.1 pounds, which represents the amount of the extending force applied to the femur in this case. If the angle C was increased to 36°, it was found:

That the angle a = 35°
" " " b = 105°.

Here the forces F and F' are exerted in the same direction, since the angle b is greater than a right angle, and their resultant is the sum of the forces, which (by the same formula as before) is found to be 14.7 pounds. The weight of the leg was estimated at 21 pounds.

The loop C in the cord B A C (Fig. 3) is loose and can be slipped along the cords D C E and D' C E' so that the angle made by these cords with the splint can be changed with the obliquity of the suspending cord B A C. The lower leg should be parallel with the bed, while the heel is not more than two or three inches above the bed.

If the pulley through which the cord passes is fixed in a ceiling which is 9 to 12 feet high, a perpendicular line dropped from the pulley should fall beyond the foot of the adult patient. In the case of a child, where the weight of the leg is less, the obliquity of the cord should be greater. The obliquity of the cord should be sufficient to make an angle of from 15° to 35° with the perpendicular. If there is any tendency for the patient to slide toward the foot of the bed, it may be obviated by raising the foot of the bed by means of blocks. In the case of a child, it may be well to pass a cord loosely about the body under the arms, and fasten it to the head of the bed, to serve as a check to any great change in the position of the patient. The leg is open for inspection and the supporting strips can be readjusted as the parts atrophy. The slight natural anterior curve of the femur can be maintained. The circulation is undisturbed, for the nutrition is not interfered with by the pressure of retentive apparatus and it is as perfect as it can be during enforced quiet. The leg can be kept cool or warm as desired. The patient may sit up or lie down as comfort suggests. The bed-pan can be used without disturbing the fracture, and the best possible result in fracture of the shaft can generally be obtained, viz., no appreciable shortening and early union. This is obtained without bed-sores or any of the constitutional complications which are liable to follow confinement in a fixed position. The splint is well adapted to the treatment of all fractures of the femur, whether they are intra- or extra-capsular, through the trochanters, the shaft, or the condyles. The results of the treatment of fractures of the neck of the thigh in the splint are very satisfactory in the great majority of cases. Most of the unsatisfactory results obtained are probably due to imperfect adjustment of the fractured ends. The feeble aged persons who are most liable to this injury, derive comfort from its use and greater freedom of motion than they can enjoy with any other apparatus, or than pain will permit if allowed to go without treatment or a splint.

After a long experience with the splint in private practice and hospital work, and after having observed its employment by the late Dr. John T. Hodgen during the last fifteen years of his life, I know of but one practical difficulty which arises in its universal and immediate use in all fractures of the femur. This objection pertains only occasionally to the fractures of the middle third of the bone in children. These exceptions are rare, and if a perfect adjustment of the extending force to the necessity of the individual case could be obtained at once, they would be reduced to a minimum. The objection is found in the spasmodic contraction of the muscles, which at times is so frequent and violent, immediately after injury, that some lateral pressure is necessary for the comfort of the patient. This spasm may in part be controlled by lateral supports to the thigh or by permitting the leg to rest upon the bed for a few days with extension applied after Buck's method. No form of dressing will uniformly control it. After this irritability subsides, the leg is more comfortable and more efficiently treated in the suspension-splint. This clonic contraction of the muscles is more likely to be present if the extending force is in excess of the necessities of the case. The excessive tension acts as an irritant.

The only obvious change effected by the motion resulting from the spasm is an increase in the amount of the provisional callus. It does not delay union, but provokes by irritation an increased inflammatory deposit about the break. I find that a sand-bag partly full placed on the thigh while it is in the suspension-splint materially mitigates this spasmodic action. Fortunately, these cases are rare. Clonic contraction will, in isolated cases, occur with any splint and under any plan of treatment, for no lateral support or compression can prevent the contraction which accompanies a muscular spasm. Opiates are sometimes useful, in the case of nervous children, for a few days after such an injury is received. The plaster-of-Paris dressing is not, I think, admissible except in children less than eighteen months old.

This splint, and this manner of applying extension, afford a most perfect means of neutralizing the tonic contraction of the muscles which so often determines shortening. The oblique suspension gives continuous and equable extension of an amount sufficient to accomplish a perfect result, without the waste of any force, and it insures to the patient the most perfect liberty attainable by any known means compatible with comfort and safety.

The point of support, the pulley A, Figs. 1 and 3, should never be brought nearer the plane of the bed than eight feet. This gives the patient the full liberty of the bed without changing materially the extending force.

The foot-piece shown in Fig. 3 is one which I have used with some satisfaction in fractures of the neck

of the femur. It is also useful where the splint is used in the treatment of compound fractures of the leg. It will prevent rotation, it obviates drooping or extension of the foot, and is easily adjusted.

Dr. J. Freund, of Champion, Michigan, has devised a foot-piece which answers a good purpose. It is held in position by two transverse slips of wood fastened by thumb-screws to the lateral wires of the splint. The inclination of the foot-piece is fixed by a third thumb screw, which controls the inclination of the foot. It can be used with either splint and is an effective foot-piece.

MEDICAL PROGRESS.

Magnesia-isinglass Bandages.—DR. JOSEF ENGLISCH states in a communciation to the *Wiener medicinische Wochenschrift* that in his experience isinglass is preferable to plaster-of-Paris for rigid bandages, on account of its lightness and extraordinary firmness. According to the author, it is especially adapted to cases in which the patient intends entirely or partly to follow his usual occupation. Its disadvantage is, that it takes a long time to harden, and he mentions this as the reason why it has not yet been generally adopted. To obviate this disadvantage, he has used for the last eight years magnesia isinglass, which he claims is very satisfactory. Four parts of a solution of soda isinglass are by slow boiling reduced to the consistence of thick syrup, and then triturated with one part of finely powdered magnesia, till the mixture becomes whitish with a slight yellow tinge. The unrolled bandages are well stirred in this pultaceous mass, and then carefully rolled upon a wooden roller. The prepared bandages must not be exposed to the air for more than fifteen or twenty minutes, and before their application the limb is covered with a double layer of an ordinary calico bandage. No cotton-wool or flannel must be used. Four or five layers of the magnesia isinglass bandage are sufficient for the arm, but five or six layers are required for the lower extremity. When the apparatus is intended to remain undisturbed for a longer time than usual, strips of the same material, or of thin leather or cardboard, may be inserted between two successive layers. From ten to twenty minutes after its application the apparatus ceases to be sticky, and in from three to ten hours, according to the temperature of the room, it is perfectly hard.—*Therapeutic Gazette*, April 15, 1890.

The Use of Iodol in Syphilis.—DR. SZADEK, of Kiew (*Therapeutische Monatshefte*, April, 1890), has employed iodol externally in a number of cases of syphilitic ulceration and concludes:

1. That the tertiary gummatous ulcerations heal very rapidly under the application of iodol, and that the drug acts as a specific.

2. That the effect of iodol on soft chancres and open buboes is less satisfactory than that of iodoform, and it requires a longer time to effect a cure.

3. The absence of disagreeable odor makes the drug much preferable to iodoform, particularly in private practice.

Internally the author administered iodol, in doses of from 5 to 15 grains three times daily, to 22 patients suffering from syphilis, 5 with secondary manifestations, and 17 with tertiary. No acne or other disagreeable symptoms were produced and the influence on the disease was marked, though not as rapid as that of potassium iodide. He thinks that it is to be preferred to the potassium salt where a rapid and energetic action is not important.

The Treatment of Varices by Injection.—According to the *Wiener medicinische Presse* MOLLIÈRE employs the following coagulating injection in the treatment of varicose veins:

℞.—Iodine	. . . . .	1 part.
Tannic acid	. . . . .	9 parts.
Distilled water	. . . .	10 " —M.

This solution, it is said, is not irritating and quickly causes coagulation of the blood. For half an hour before the operation the patient is required to walk about in order that the varices will be distended. A moderately tight band is then placed around the limb above the point chosen for the operation, and one drop of the solution is injected into the most prominent vein. On withdrawing the needle the orifice in the skin is closed with iodoform collodion. The bandage is allowed to remain in place and the patient is required to keep absolutely quiet for fourteen days. At the end of this time the vein is felt under the skin as a cord and gradually diminishes in size. The author has had no bad results from this method of treatment.

Peruvian Balsam in Local Tuberculosis.—According to the *Provincial Medical Journal* DR. JASINSKI, of Warsaw, has used Peruvian balsam in thirty-one cases of local tuberculosis of the bones and skin with excellent results. The drug was used either in substance or in an alcoholic mixture, and was in some cases applied as a dressing, in others was injected into tuberculous cavities. In all but one of the cases healing ensued more or less rapidly.

The Inefficiency of Sand Filters.—DRS. FRÄNKEL and PIEFKE, of Berlin, have recently made an exhaustive study on the filtration of drinking-water through sand (*Zeitschrift für Hygiene*, No. 1, 1890). Their experiments conclusively prove that the danger of infection from impure water is only slightly reduced by filtration through sand; bacteria passing through at all times, but in larger numbers just after the filter has been cleaned and again after it has been in use for some time.

Intestinal Diseases of Infants.—In an interesting article published in the *Archives of Pædiatrics*, May, 1890, DR. W. S. CHRISTOPHER ably advocates the theory that all the so-called summer complaints of infants are due to ptomaine poisoning. The following is a summary of his conclusions:

1. Various forms of abnormal fermentation occur in the bowels, and when they occur in infants, and produce symptoms, they constitute the immediate cause of the collection of diseases known as summer complaint.

2. Summer complaint so defined includes putrefactive constipation and all forms of diarrhœa and dysentery

not diphtheritic in origin nor symptomatic of septicæmia.

3. The three great predisposing causes of summer complaint, viz., hot weather, overcrowding, and bottle-feeding, are to be regarded as acting solely as adjuvants to fermentation.

4. The diet during summer complaint should be determined entirely by the conditions within the bowels, and not by theoretical ideas as to Nature's food.

5. At least two well-marked forms of abnormal intestinal fermentation may be recognized clinically, viz., the putrid and the acid.

6. In the putrid fermentation, carbohydrates should constitute the food, and in the acid form albumin should be the only food.

7. Milk, containing, as it does, both proteids and carbohydrates, should be prohibited in all forms of intestinal fermentation. If properly sterilized, other food can be given; nursing babies with severe summer complaint should be taken from the breast.

8. All food administered, of whatever type, should be aseptic.

9. In addition to regulating the diet on the foregoing principles, the treatment should include laxatives and intestinal antiseptics.

10. The lesions are to be regarded as the results of the fermentation, and are more marked in proportion to the duration of the disease.

11. The lesions assist in prolonging the disease, and in all probability act by providing a habitat for the microörganisms, and by their secretions furnishing the germs with material with which to maintain their biological activity.

12. In chronic cases, where well-marked lesions may be supposed to exist, lavage of the large intestine and of the stomach, with appropriate antiseptics, is indicated.

13. Opium is contraindicated except in persistent acid fermentation which threatens to produce anatomical lesions.

The Abortive Treatment of Herpes.—M. LELOIR employs the following solutions in the abortive treatment of herpes:

℞.—Resorcine . . .	30	grains.
Hydrochlorate of cocaine	7½ to 30	grains.
Tannic acid . . .	1½	drachms.
Alcohol (90 per cent.) .	3	ounces.—M.

or

℞.—Hydrochlorate of cocaine	15	grains.
Extract of cannabis indica . . .	150	grains.
Spirit of peppermint .	150	minims.
Alcohol (90 per cent.) .	3	ounces.—M.

Bryonia Alba as a Hæmostatic.—According to PROFESSOR PÉTRESCO, of Bucharest, bryonia alba is a common remedy in Roumania for the arrest of hæmorrhage, and he has made a number of experiments on man and animals to determine its value (*Les Nouveaux Remèdes*). He found that it caused marked contraction of the capillaries, and was surprised at its power in arresting hæmorrhage. His preparation was made by boiling 6 drachms of the dried root in 10 ounces of water until the decoction was reduced to 5 ounces. After filtration and the addition of sugar this amount may be given in three or four doses at intervals of half an hour.

He has also treated cases of metrorrhagia, hæmoptysis, hæmatemesis, and epistaxis with the alcoholic extract in doses of 30 grains daily, and places the drug first in the list of hæmostatics.—*Medical Chronicle*, April, 1890.

Bromide of Ethyl Anæsthesia.—For nearly two years DR. E. HAFFTER employed bromide of ethyl as an anæsthetic, and during that time he has administered it to more than 200 patients (*Correspondenz-Blatt für Schweizer Aerzte*, March, 1890). He believes it to be a safe and valuable anæsthetic for minor surgical operations. Merck's preparation is the best according to the author, and its purity can be determined by the fact that if poured upon the hand it should evaporate rapidly and without leaving any residue; that if shaken with water and filtered, the filtrate should be neutral, and give no reaction with nitrate of silver; and that the addition of concentrated sulphuric acid should not cause a brown color to appear.

The author concludes his paper with the following summary:

1. Bromide of ethyl acts with great rapidity, and usually without a period of excitement; it is perfectly safe when used in small amounts, and there are seldom any unpleasant after-effects.

2. The best method of administration is to pour the entire quantity to be used (1 to 5 drachms) on an impermeable mask, which is placed close to the patient's mouth and nose.

3. In most cases the operation can be begun in from fifteen to twenty seconds after the first inhalation, though the duration of anæsthesia will be very short, and only suitable for minor operations, opening abscesses, etc.

4. There are a few patients, chiefly alcoholics, who cannot be anæsthetized by the agent.

5. There are no contra-indications to the use of bromide of ethyl employed in small amounts and for short operations.

Prescription for Pruritus Vulvæ.—The following formula for pruritus vulvæ is quoted in the *Kansas City Medical Record:*

℞.—Carbolic acid	16	grains.
Dilute hydrocyanic acid . .	2	drachms.
Tincture of opium } Glycerin }	of each ½	ounce.
Distilled water sufficient to make 4 ounces.—M.		

To be applied as often as required.

Antiseptic Application for Diphtheria.—The following antiseptic mixture is recommended as an application to diphtheritic patches (*Internationale klinische Rundschau*, April 13, 1890):

℞.—Borate of sodium } Chloride of calcium }	of each 75	grains.
Carbolic acid . . .	3½	"
Glycerin	2½	drachms.
White honey . . .	3½	ounces.—M.

To be applied by means of a soft brush.

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OF MEDICAL SCIENCE.

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SATURDAY, MAY 10, 1890.

PARACENTESIS THORACIS.

LIEBERMEISTER'S communication upon pleuritis, referred to in our last issue, ably discusses the question of operative interference with effusions. While nothing new is brought out, the present state of the best professional opinion is clearly and judicially set forth.

Paracentesis has become more frequent since improvement in operative methods has diminished the liability to untoward result. Still, considerable difference of opinion exists concerning the indications for removal of non-purulent effusions in acute or subacute cases.

In order to render the indications entirely clear, Liebermeister argues, it is necessary to bear in mind that, with removal of the exudate, the disease is by no means brought to an end; but, on the contrary, so long as inflammatory processes in the pleura continue, the effusion will likewise continue to reaccumulate. On the other hand, it must be taken into consideration that in certain cases the operation is the direct means of saving life; and that, in many other cases, only through paracentesis can a favorable prognosis as to ultimate result be given. An urgent indication for operative interference is presented when an extensive effusion seriously embarrasses respiration or circulation. If the interference with respiration has not reached a high grade, and especially if during rest there is no considerable dyspnœa, the indications are not so urgent. So long as the exudation is increasing, and febrile symptoms continue to be manifested, paracentesis can be of but temporary benefit, because, as a rule, the exudation soon again reaches and even exceeds its former height. Moreover, when the effusion has reached its greatest point, it is in most cases judicious to wait a short time and observe whether resorption will not take place, either spontaneously, or under the influence of sorbefacient remedies. In this way many cases reach perfect recovery without unpleasant sequelæ.

One must not wait too long, however, for there is danger that the elasticity of the compressed lung may be so seriously damaged that complete re-expansion is no longer possible. How long the lung may bear compression without losing its elasticity cannot be definitely stated, but Liebermeister would say that we can no longer expect perfect re-expansion when an extensive effusion has remained within the pleural sac longer than four to six weeks. Thus, paracentesis must sometimes be performed not with the idea of permanent result, but for the purpose of bringing about, if only for a time, re-expansion of the lung, and thus averting the danger of complete loss of elasticity.

The period of expectancy, too, varies in individual cases with the individual indications. With small effusions, one can wait longer in the hope of absorption; on the other hand, when the exudation fills the entire pleural cavity, it is only in children that complete resorption can under any circumstances be expected. Furthermore, extensive exudation may suddenly and unexpectedly place life in immediate danger; so that in these cases, as a rule, paracentesis should not be delayed. Above all, must the operation be immediately undertaken when marked dyspnœa is manifested, even during perfect rest, or when the circulation is seriously interfered with. As a general rule, it may be stated that too early a resort to paracentesis is less to be deprecated, and less likely to be dangerous, than too long a delay. Purulence of the effusion is, in itself, sufficient indication for operation.

Paracentesis may be performed in either of two ways: The smallest possible opening, sufficient to secure removal of the fluid with the help of aspiration, may be made with trocar or needle, and this opening closed immediately after the operation; or the so-called radical operation may be made. In

the latter, a large opening is made in the wall of the thorax, and is kept patent. According to Liebermeister, it is best performed by resection of one or more ribs. The rule may be laid down that aspiration is the best procedure for non-purulent effusion, resection and drainage for purulent effusion. In either case, as a matter of course, strict aseptic precautions must be taken; the skin at the point of operation, as well as all instruments employed, being thoroughly disinfected.

Considerable difference of opinion has been expressed as to the effect of entrance of air into the pleural cavity during paracentesis. Repeated experience, on the one hand, has shown that this accident is often attended with very serious results, and not seldom quickly followed by death. On the other hand, certain surgeons assert that air may be allowed to enter the pleural sac during paracentesis without fear. Liebermeister would reconcile these contrary opinions by suggesting that the latter surgeons have most frequently, or even exclusively, had to deal with old empyemas, which must be managed in every respect as other large abscesses. A large opening is made, through which air must necessarily enter, and if sufficient care be taken to keep the region of operation aseptic air is not to be feared; for in such cases the pleura is thickened, and overlaid with inflammatory tissue, and for this reason but slightly irritable. Matters are very different, however, in acute pleurisy, and especially in a case with sero-fibrinous exudation; and it is in the latter class of cases, as repeated experience teaches, that entrance of air may be followed by fatal results, and is to be most scrupulously guarded against.

In Liebermeister's clinic, sero-fibrinous exudations are, as a rule, aspirated in the following manner: The patient lying in bed in a comfortable position upon his back with a somewhat elevated trunk, the thorax is penetrated by a hollow needle connected with a long rubber tube through which the fluid is allowed to siphon out into a vessel placed upon the floor. The rubber tube is interrupted by a section of glass tubing through which the passage of the fluid can be observed. It is sometimes desirable, but with copious effusions not absolutely necessary, to fill the tube and needle before operation with carbolic acid solution or other antiseptic fluid which is retained by compression of the tube and allowed to flow out at the moment of puncture. Entrance of air into the pleural cavity is by this means absolutely prevented. Before use, the needle is disinfected with boiling water and the tubing with carbolic acid solution. The skin at the site of puncture is carefully cleansed with alcohol, ether, carbolic acid solution or corrosive sublimate solution. The puncture is made as a rule in the 4th, 5th, or 6th intercostal space, midway between the mammary and axillary lines. As a usual thing, the exudation is not entirely removed, the procedure being interrupted as soon as the lung has sufficiently expanded, or when somewhat severe paroxysms of coughing occur. One or two quarts are usually drawn off at a time. When reëxpansion of the lung is attended with difficulty, it is judicious to remove but a small quantity of fluid at first, and after a while to repeat the operation. If after aspiration the effusion again reaches its former height, experience teaches that it is still judicious to wait; for resorption will soon begin. Only in case respiration again becomes seriously embarrassed should the operation be repeated.

A trocar may sometimes be employed in place of the needle, the canula having a second branch to which the siphon tube is attached. This is especially applicable in cases where it is intended to remove the effusion completely; because in such cases the lung in its expansion might be wounded by coming in contact with the point of the needle.

Special consideration must be given to those cases in which the effusion is so limited that no excess of pressure over the pressure of the atmosphere on the pleural cavity is developed, but in which on the contrary a so-called negative pressure exists; as also to those cases in which the effusion has been in great measure re-absorbed, in consequence of which the intra-pleural pressure has again been rendered negative. In such cases, as may be understood from reflection upon the fact that but little or no displacement of neighboring organs has taken place, paracentesis will be but seldom indicated. If, however, it be attempted with simple puncture or the use of the trocar, the fluid will not flow through the siphon, but on the contrary air will be aspirated into the pleural sac. In such cases it is necessary either to fill the tube before making the puncture or to employ other means of creating a vacuum, as in the aspirators of Bowditch and of Dieulafoy. As a rule, however, unless decided aspiratory force is to be employed, Liebermeister considers these apparatus much less convenient than the simple siphon. When an aspirator is employed it should be used with great caution: for if the apparatus is mechani-

cally perfect, a pressure of one atmosphere may develop, more than fifteen times that which is exerted by the column of liquid of 40 to 60 cm. in the depending siphon tube. Such a pressure must, if the lung is not capable of prompt and sufficient re-expansion, cause rupture. In this way, Liebermeister would explain the not very rare cases in which pneumothorax has been observed after aspiration of a pleural effusion, notwithstanding the fact that entrance of air from without has been prevented. This danger of rupture of the lung can be avoided if the aspirator be not too rapidly used and sudden strong pressure never allowed. The appearance of blood in the aspirated fluid is a signal for immediate cessation.

Among the ill results which may follow paracentesis may be noted pulmonary œdema, which is to be explained by removal of pressure from the vessels of the compressed lung, permitting transudation of fluid through their walls. This is manifested by copious expectoration of frothy liquid at times somewhat blood-stained. It is also possible that this may in part be aspirated into the sound lung and bring about danger of suffocation. Less frequently, symptoms of œdema are manifested in the sound lung. In certain cases in which thrombi have formed in the heart or in the constricted branches of the pulmonary artery, the freer circulation following paracentesis may lead to dislodgement, giving rise, in exceptional instances, to hæmorrhagic infarcts in the lung, or other manifestations of embolism. Too rapid expansion of the lung may cause severe and distressing paroxysms of cough, an indication for slow and deliberate procedure, or as already noted, for interruption of the operation.

REVIEWS.

A SYLLABUS OF OBSTETRICAL LECTURES IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF PENNSYLVANIA. By R. C. NORRIS, A.M., M.D. Philadelphia: W. B. Saunders, 1890.

IN the short space of 154 pages Dr. Norris has placed a very thorough and useful summary of the lectures of Professor Hirst in the University of Pennsylvania, and has certainly succeeded in producing one of the best, if not the best, book of its kind which we have yet seen. Unlike many books of its size which attempt too much, Dr. Norris seems to have possessed the knack of putting in just the right amount of information to be of service to the student and not so much as to make him think that he knows everything, when in reality he knows comparatively little.

No student can read this book without feeling the necessity for a larger work, yet it will give him the hooks upon which he may hang the fruits of his studies when they become sufficiently ripe for him to consider them as ready for permanent assimilation.

THE MEDICAL ANNUAL AND PRACTITIONER'S INDEX FOR 1890. New York: E. B. Treat & Co., 1890.

AT the present time the chief aim of several prominent publishers seems to be the placing upon the market of books which will contain in a brief, concise manner the chief points of progress in medicine during the past year. The one which is before us seems to be an improvement upon that of 1889, but, at the same time, we think it is to be regretted that the arrangement of the type and the character of the printing are not better than they are. These have little to do, however, with the value of the material which it contains, and concerning which many of our readers are already familiar. The changes which have been made in the present issue consist in a still further extension of the pages of the book by the appointment of collaborators upon the subjects of electro-therapeutics, life insurance, and thermo-therapeutics. Altogether the book is one which, when used in conjunction with several other works of the same kind, will place before the physician a large amount of information which he could only obtain otherwise through very wide reading and by subscribing to a large number of journals.

SOCIETY PROCEEDINGS.

PHILADELPHIA ACADEMY OF SURGERY.

Stated Meeting, April 7, 1890.

JOSEPH HEARN, M.D., IN THE CHAIR.

DR. JOHN B. ROBERTS reported

A CASE OF SUPPURATION IN SECONDARY CARCINOMA OF THE CERVICAL GLANDS.

Some time ago a man had been brought to him with a small ulcerated nodule on the left side of the upper lip and with a mass of enlarged glands on the left side of the neck below the angle of the jaw. The history, which was rather indefinite, was that about a year or two previous the man had received an injury near the mouth and that this had not healed, or if it had, there remained thickening and hardening. Nothing was done for this, and, later, enlargement of the glands of the neck appeared. He was seen by Dr. Keen, who, according to the patient's statement, advised removal of the cervical glands. For some reason he then came to Dr. Roberts, who considered the case to be one of epithelioma of the lip with secondary involvement of the glands of the neck, and advised against any operation, because he believed it impossible to remove thoroughly the infiltrated tissue. He sent the man to Dr. Mears, who thought that the glandular tumor could be removed, and that it was probably due to tubercular disease, the man having a cicatrix on the neck where a gland had suppurated in early childhood. The patient was then admitted to a private room in St. Agnes's Hospital and carefully watched, anti-syphilitic treatment being tried during this time. In a short time, however, he left the

hospital. A few weeks later it was evident that there would be suppuration in the tumor in the neck, the nodule on the lip remaining unchanged. He was again seen by Dr. Mears, who incised the cervical swelling and scraped away a quantity of softened tissue and treated the man on general principles. Subsequently the glands increased in size, and it was decided to excise the tumor of the lip as a diagnostic measure. An assistant made some sections of the excised nodule, which were shown under the microscope. Dr. Mears had some slides prepared of the matter removed from the glands, but, unfortunately, he was absent and had not sent the slides. The subsequent history of the case is that the glands above the clavicle began to enlarge and the side of the neck presented the appearance commonly seen in secondary glandular involvement of carcinoma of the lip. The patient has since died with swelling and tumefaction of the front and side of the neck.

Dr. Roberts thought that the clinical history clearly proved that this was a case of epithelioma of the lip, and that the suppuration occurred in the glands secondarily involved. Such a complication is rather unusual, and may, perhaps, have been due to the fact that these glands had been the seat of tubercular disease in early life; the irritation of the epithelioma lighting up the old trouble and leading to suppuration.

DR. O. H. ALLIS, in discussing this report, said that he had seen one case in which suppuration occurred in carcinoma of the cervical glands, but in that case the disease was primary.

DR. DE FOREST WILLARD said that some some six years ago a careful surgeon had removed an epithelioma of the lip. A year later the glands in the submaxillary region were involved and the growth had returned at the seat of operation. One of the glands in the submaxillary region suppurated and discharged a considerable quantity of creamy pus. The patient finally died from these secondary growths involving the submaxillary and cervical glands. He saw no reason why the irritation of an invading growth, like that of secondary deposit, should not set up an inflammation in the glands which would result in true suppuration. Such pus formation is not the same as cancerous suppuration; it is a simple inflammation set up by the irritation, and may, perhaps, involve parts of the gland which are not even the seat of cancerous deposit.

CORRESPONDENCE.

ST. LOUIS.

To the Editor of THE MEDICAL NEWS,

SIR: Some weeks ago there was in the St. Louis poorhouse a patient who presented some peculiar and interesting symptoms. He had peculiar recurring spasmodic paroxysms involving first the left platysma, then the flexors of the left hand and arm, then those of the left lower extremity, then crossing over and involving the right lower limb and usually extending no further. The first symptom, which appeared a number of months prior to the development of the spasms, consisted in an involuntary clasping of the hand upon some part of the chest or neck, continuing for several minutes and then relaxing. The movements occurred once or twice daily, later more frequently, and as time went on spasmodic movements and contractions occurring.

In the early part of his affection he was seen by Dr. L. Bremer, of this city. Later he went to the East, visited New York and Philadelphia, and was treated there with no material benefit, and finally returned to St. Louis. The attention of Dr. A. B. Shaw, one of the consulting physicians of the poor-house, was called to the patient by Dr. Fleming, the physician in charge and by Dr. Walters, one of the assistant physicians at the Female Hospital near by. Dr. Walters suggested that the case was one of myotonia. Dr. Shaw concurred in the diagnosis, and after watching the case with some care presented the man before the St. Louis Medical Society as a case of that rare affection, and made a variety of electrical tests which he thought demonstrated the correctness of the diagnosis. Drs. J. K. Bauduy and C. H. Hughes took part in the discussion of the case and accepted the views of Dr. Shaw. Dr. L. Bremer, on the other hand, recognizing the patient as the one whom he had formerly treated, took a different view of the case, and very positively and emphatically disputed the diagnosis. He denied the significance of the electrical tests and asserted that the symptoms had been incorrectly interpreted. When pressed for another diagnosis, he simply said that he could not yet make a positive diagnosis, but that it certainly was not myotonia. The discussion was carried on for several meetings with considerable interest, and those who were present assure me that Dr. Bremer was treated with scant courtesy by some of the other specialists.

Later Dr. Bremer removed the patient from the poorhouse and kept him for some weeks at a private hospital that he might have the opportunity to study carefully the symptoms, make exact tests, and reach a positive diagnosis.

While he admitted the absence of one of the usually most marked and earliest symptoms of cerebral tumor, he finally concluded that the symptoms were only to be explained by the presence of a tumor in the motor area at the centre for movements of the platysma. He presented the patient and elaborated the course of reasoning by which he had reached his diagnosis at a meeting of the Medico-Chirurgical Society, closing with the remark: "The neurologist has located the lesion. It remains for the surgeon to operate."

This was undertaken by Dr. N. B. Carson, on March 26th, at the St. Louis Mullanphy Hospital. He removed a disk one and one-half inches in diameter and then enlarged the opening with chisel and hammer and removed a cystic growth about the size of a small hickory-nut from the point which Dr. Bremer had assigned as its site.

At the meeting of the St. Louis Medical Society, Saturday, April 5th, Dr. Bremer presented a detailed report of the case, illustrated with large drawings, reproduced from instantaneous photographs, and colored drawings showing the microscopical structure of the growth, which was pronounced by Drs. Bremer and Dean to be a cavernous angioma.

Dr. Carson reported the operation and announced that the patient was doing well, the wound healing by first intention, with no elevation of temperature, and that there had been no recurrence of the spasms since

the operation. Following the report of the case by Drs. Bremer and Carson, Dr. Shaw took the floor. He complimented Dr. Bremer on his diagnosis, though he thought the symptoms were hardly such as to warrant it, and congratulated him upon the successful result of the operation as confirming the diagnosis. Nevertheless he himself still believed that the patient did present the condition of myotonia. Whether this resulted from or was simply concurrent with the tumor he could not say, but he was as sure of the existence of myotonia then as Dr. Bremer had been of its non-existence. Dr. Hughes took much the same position.

The St. Louis College of Physicians and Surgeons is again attracting a good deal of attention in the local profession. Seven of the professors who took chairs in that institution at the beginning of the last course of lectures have resigned. These are Drs. Y. H. Bond, A. M. Carpenter, Charles Barck, Hugo Summa, P. French, I. N. Love, and J. R. Lemen, who filled respectively the chairs of gynecology, principles and practice of medicine, ophthalmology and otology, physiology and histology, surgery, diseases of children, therapeutics, and physical diagnosis. Besides these Dr. C. H. Hughes, who had been notified of his proposed election to the new professorship of diseases of the nervous system, when he heard of the action of these gentlemen, sent word to the trustees declining the proposed honor.

The reason for the action taken by these gentlemen as stated by themselves is that an amendment to the constitution under which the institution acts has been adopted, by which "The appointment of all members of the faculty shall be made annually at the meeting of the Board of Trustees. The Dean, with the concurrence of the executive committee, shall nominate for approval by the board, all those who are to compose the faculty for the ensuing year."

The aforesaid executive committee consists of Dr. Louis Bauer, Dean, his son Dr. Joseph L. Bauer, and Dr. A. S. Barnes. The only other member of the faculty who has a voice in the board of trustees is Dr. C. W. Cale, who graduated at the institution three or four years ago, and was a special pupil of Dr. Bauer. From this it is apparent that the chairs in the faculty are held for periods of one year only at the individual behest of Dr. L. Bauer, a "man who," in the words of one of his former associates, "came to St. Louis and attacked its best surgeon, Dr. Hodgen, in a manner so contemptible that Dr. Bauer was kicked out of the St. Louis Medical Society."

The most remarkable fact in this statement of those who resigned is that this condition of things came to their knowledge only after they had undertaken their work for the year. It was generally understood by the profession long ago, and much surprise was expressed when these gentlemen consented to enter the institution under such circumstances.

In an interview with a representative of the daily press, Dr. Bauer cast a slur upon the Beaumont Medical College by a remark to the effect that it was organized by a number of ex-professors of the College of Physicians and Surgeons who had resigned upon ascertaining that they were to be dropped.

In response to a demand from a member of the Beaumont faculty, Dr. Bauer sent a card to the daily paper above referred to, stating that only three of those who withdrew from the faculty of the College of Physicians and Surgeons six years ago had entered into the organization of the Beaumont Medical College.

The latest phase of this matter appears in the filing of a petition in the circuit court for the incorporation of a new medical college to be called "The Marion-Sims Medical College." The petitioners are those who resigned from the College of Physicians and Surgeons with Dr. Hughes, who declined a professorship. It can hardly be said that another medical college in our city is a long-felt want except on the part of those who are anxious to have the title "Prof." prefixed to their names.

A patient by the name of Brennan, who has been for some months past at the Quarantine Hospital, died Tuesday, April 8th, of leprosy. His case has been discussed by the medical societies and has been the subject of dispute and even of litigation. He had been pronounced a leper by those most competent to diagnose that disease, and as such had been taken in charge by the health department of the city and sent to the Quarantine Hospital. Repeated attempts were made by those who could not accept the diagnosis to have him released, but they never succeeded in convincing the authorities that an error had been made, and he was cared for in what was deemed the best way to prevent him from becoming a source of danger.

At the annual meeting of the Augusta Free Hospital Association satisfactory reports were presented by the several officers.

Mr. Charles Parsons offered to give to the hospital $15,000 upon condition that as soon as possible the name of the institution shall be changed to the "Martha Parsons Free Hospital for Children" with a pledge that that name shall be retained as long as the hospital shall exist. The association voted to accept the offer of Mr. Parsons, and the necessary steps to effect such change of name will be taken forthwith. The name is to be given as a memorial of Mr. Parsons's deceased wife, who was actively interested in the founding of the hospital.

HAVANA.

The First Cuban Medical Congress.

To the Editor of THE MEDICAL NEWS,

SIR: For two years preparations were being made by the medical fraternity of this island for the Medical Congress which was held in Havana from the 15th to the 22d of last January. Never before have the physicians of the different cities and towns of Cuba had the opportunity of meeting to discuss medical matters, for Havana is the only place on the island where medical societies exist. Here there are two, the Academy of Medical, Physical, and Natural Sciences and the Society for Clinical Studies. At one time there was a strong probability that the plan of organizing the Medical Congress would be abandoned, for it was feared that papers of real scientific value would be scarce; but at the eleventh hour good counsel prevailed, and the Congress was held. A general invitation to all physicians who wished to honor the Congress with original papers was published in the Cuban medical journals, and to this happy thought it is due that Professor Guyon and Drs. Albarran and

Lluria, of Paris, and Dr. Augustin M. Fernandez, of New York, sent valuable contributions.

It is said that the number of papers sent to the Secretary of the Committee of Organization was nearly one hundred, and that fifty-four of these were actually read before the Congress. The total number of members present was one hundred and ninety-four, among them a woman physician, Dr. Laura Carvajal de Lopez, the first female graduate of the University of Havana. Dr. Fernandez, who came as a delegate from the Medico-Legal Society of New York, was the only representative from abroad.

Of the scientific value of the papers read I will say nothing until the volume in which they will appear is published; however, some novel topics were discussed, such as "congenital tetanus in infants," and the treatment of the chronic diarrhœa peculiar to hot climates by what the author of the paper calls "intestinal dyalization." This "dyalization" is carried out by him in the following manner: First, he administers early in the evening one or two grammes of ipecacuanha, with the view of promoting emesis, and repeats the dose each time the patient complains of pain in the stomach; in the morning he gives from one to two grammes of calomel, repeating the dose on the second, and sometimes on the third, day. Three or four hours after the administration of these heroic doses of calomel, he gives from fifteen to thirty grammes of sodium sulphate, which he repeats if after two or three hours "the patient has not had free passages." This treatment he keeps up for several weeks! The author claims that this method of treating chronic malarial diarrhœa gives a greatly reduced mortality.

There are no epidemic diseases here at present, other than the amount of typhus and typhoid fever, croup, and diphtheria usual at this season of the year. On account of the mildness of the past winter we have had a number of cases of yellow fever. In the Hospital Mercedes there were in January four cases, in February five, and in March one, making a total of ten cases, with four deaths. In the Military Hospital there have been so far this year twenty-five cases and seven deaths. In the small private hospitals, of which there are five in this city, twelve cases have been treated during the three months, with a mortality of four.

Concerning the management of this disease, which is too old an acquaintance here to be dreaded as it is in the United States, the Cuban physicians generally pursue a symptomatic treatment, beginning with a purgative, and without particular preference for any special drug. Good nursing is considered essential. One of the papers read before the Congress was on the recent mortality statistics of yellow fever, in which the author severely criticised the results obtained by Dr. George M. Sternberg with his bichloride of mercury treatment.

A matter that is going to produce some commotion here in the summer is the enforcing of the recent regulations of the Marine Hospital Service in regard to the introduction of lepers in the United States. The sanitary inspector of this port, good old Dr. Burgess, is to have, in my opinion, his hands full of business with the protests and clamor from the rejected would-be tourists.

Havana is well provided with physicians, for, according to the *City Directory*, there are 307, which number, divided among its 200,000 inhabitants, gives a ratio of 1 for every 650. This is without counting the many army and navy medical officers residing in the city.

In my next letter I shall speak of the hospitals and other medical institutions of Havana.

BALTIMORE.

To the Editor of THE MEDICAL NEWS,

SIR: The annual meeting of the Medical and Chirurgical Faculty of Maryland has just closed. It was held in the hall of the Faculty, which contains a library of more than six thousand volumes. The sessions occupied the mid-day hours of four days, the evening of Thursday being devoted to a banquet in honor of the county delegates. About 125 new members were received—a notable event in the history of the Society. The Faculty was chartered nearly a century ago, and was given the right to examine persons who wished to practise in Maryland, and to confer upon suitable applicants licences to practise. This chartered right would, if strictly and generally enforced, have given a very high standing to the profession in Maryland, and would have saved the State from the curse of quackery and the slow and laborious task of restoring medicine to its former prestige. Unfortunately, laws have been passed by the Legislature giving to anyone who so desires, whether trained in medicine or not, the right to practise and to collect fees, and the Faculty, in consequence of dissensions among its members and want of public spirit, has never had the courage to oppose such enactments, which are probably unconstitutional. Recently a bill for a Medical Licence Board, endorsed by all schools, as it gave representation to those who profess to practise homœopathy and was very lax in its requirements, was passed by both houses of the Legislature. The Governor, however, vetoed it.

The Medical and Chirurgical Faculty has now entered upon a new phase of existence, and is aiming to become the State Medical Society, with a membership of more than one thousand. It is hoped that this change will result not only in a new impetus to medical work of the higher sort, and to the formation of branch societies in the counties, but also in the development of public spirit and union of effort among physicians which shall lead finally to the establishment of much-needed medical licence laws. The holding of a semi-annual meeting of the Faculty in Hagerstown during the past summer excited great interest among the practitioners of Western Maryland and led to the formation of a county Society there. This year a similar meeting will be held on the Eastern Shore of Maryland. Dr. Ashby, formerly the editor and proprietor of the *Maryland Medical Journal*, is the leading spirit of these new ventures.

Another matter of general interest is the entrance of Dr. Rohé upon his duties as Commissioner of Health in Baltimore. He exhibits a strong desire to promote the sanitary welfare of the city and to perfect the statistics of the Board of Health, the previous inaccuracy of which is indicated by such facts as the reported excess of deaths over births. Unfortunately, Dr. Rohé has no control over his subordinates in the office, and no power to choose or to dismiss them. The sanitary inspectors are ex-saloon keepers, etc., who happen to be upon the rolls

of the political parties and out of work. There is a strong feeling among physicians against inspection of their patients' homes or persons by such men, especially as the physician is required to call them in. Mumps, whooping-cough, and diphtheria are upon the list of diseases to be reported. Individual physicians of intelligence and influence declare that as the law has been a dead letter for many years, and as they believe it to be unjust and unconstitutional, they will not notify the Health Commissioner unless they choose to do so. Under these circumstances we need not expect much improvement in our statistics of contagious diseases. It seems only fair that notification of births, nuisances, and contagious diseases should be required of the family of the patient, not of the physician. The day seems far distant when competent physicians will act as inspectors for the Health Board in Baltimore, the only condition upon which accurate notification is likely to be secured.

Important changes are taking place in the Medical School of the University of Maryland. Dr. Miltenberger has resigned the Chair of Obstetrics and Dr. Michael has taken his place, leaving the Chair of Anatomy vacant. Extensive improvements in the Hospital are proposed.

It is reported on good authority that certain women of wealth in this city will presently offer to the Trustees of the Johns Hopkins University the sum of $100,000 for the equipment of the Medical School (the establishment of which has been postponed for want of funds) on condition that female medical students shall be admitted on the same footing as male students—the co-education of the sexes being aimed at. The co-education of students in the scientific and literary courses of the University has, so far, been discouraged, if not forbidden, by the Trustees. Some wonder is expressed that these ladies do not devote their means, instead, to the endowment of the Woman's Medical College, already established here, which has a good corps of professors and maintains a very high standard of graduation.

CARBOLIC ACID GANGRENE.

To the Editor of THE MEDICAL NEWS,

SIR: I wish to add the reports of two cases of gangrene following the external use of carbolic acid to those published by Dr. Warfield in THE MEDICAL NEWS of April 12th. The notes of these two cases were published by me in the *Canada Lancet*, March, 1877, eleven years before the first of those noted by Dr. Warfield, and are as follows:

CASE I.—"About six years ago (in 1871) a gentleman brought his daughter, aged nine years, to consult me about an injury which she had sustained in one of her fingers. Whilst playing with a straw-cutter, with other children, the finger had passed between two cog-wheels, bruising the soft parts and bone down to the first joint. The medical man who was called in to dress the wound applied to it some strong carbolic acid and wrapped up the injured part in a rag. On removing the dressing in a day or two the whole finger was completely blackened and withered, in fact dead. Annoyed at such an unlooked-for result, the child was brought to me, and under the rhigolene spray the finger was removed."

CASE II.—"A lady who undertook to decapitate a chicken, unfortunately missed her aim and very nearly severed the end of her left middle finger. The doctor in attendance directed carbolic acid lotion to be applied. A quantity of the acid poured into a half-teacupful of water formed the wash, saturated with which a rag was bound around the injured finger. The next day, on removing this dressing, the parts which it had enveloped presented a bleached appearance; they were also numb and painless. This was very soon followed by a blackening of the skin and a shrivelling of the whole finger. When I saw the finger five weeks afterward, the line of demarcation was complete, nature's process of amputation slowly going on near the base of the finger. I accordingly anticipated this process by the knife and forceps, and removed the mortified portion."

J. D. KELLOCK, M.D.

PERTH, ONTARIO.

To the Editor of THE MEDICAL NEWS,

SIR: In your issue of April 12, Dr. R. B. Warfield, of Baltimore, says that the literature of carbolic acid gangrene dates only from the end of December, 1888.

If he is interested in this matter, I am quite sure he can find a considerable number of reported cases scattered through the medical journals of the last ten years. In addition to several referred to in the Index Catalogue of the Surgeon-General's Library, he will find one reported by Dr. J. B. Garrison, of Garretson's Landing, Arkansas, in the *Western Medical Reporter*, 1882; another by Dr. J. W. Hamilton, of Columbus, Ohio, in the *Ohio Medical Recorder*, 1880; and another by Professor T. G. Thomas, in the *New York Medical Journal*, 1880.

J. F. BALDWIN, M.D.

COLUMBUS, OHIO.

DEATH FROM ELECTRICITY.

To the Editor of THE MEDICAL NEWS,

SIR: It seems to me unfortunate that we should appeal to foreign learned societies for the *opinion* that currents from commercial dynamos, when passed through human or other living bodies in sufficient strength, produce death through disintegration of tissue. No opinion could be less substantially justified. No one has yet recorded the strength of current that has killed a man, or the order in which the vital organs have given out. Whatever opinion is at present held upon this last question must, therefore, rest upon inferences drawn from experiments upon lower animals.

The state of the case in regard to dogs is as follows, when either continuous or rapidly alternating currents are passed between the head and thigh; and anyone who will take the trouble to perform about a dozen experiments, of simple detail, can readily substantiate the results:

1st. It is easy so to adjust the current-strength that, by an application lasting only a small fraction of a second, the heart shall be arrested, infallibly and past resuscitation, while respiration is not at once stopped—may, indeed, maintain its rhythm and force for several minutes—and while the functions of all the muscles except the heart; of the nerves and their distal endings; and of the blood in the heart and great veins, all remain apparently normal.

2d. It is not possible to discover a strength of current, or mode of applying it, through a dog's body as described, that will either arrest respiration or cause any lesion in muscles, nerves, or blood without the simultaneous, or still earlier arrest of the heart.

It is not meant by this to deny that electrical currents may be passed in sufficient strength through animal tissues to produce any lesions which could be produced by heat, or perhaps some that could not; it is meant simply to show that one of the vital organs is so fatally susceptible to electrical currents, that somatic death from such currents is practically always initiated directly in it.

Yours, very truly,

EDWARD TATUM, M.D.

YONKERS, N. Y.

NEWS ITEMS.

Competitive Hospital Appointments in Philadelphia.—The examinations for hospital positions in this city have all been held within the last two weeks. The Mayor, on the pretext of doubting the fairness of examinations at Blockley Hospital, within the past two years, had the examining board reconstructed so that there should be some one present, as he said, to watch the examinations. Several medical schools of the city joined in the cry of favoritism, which resulted in a number of very competent members of the visiting staff being displaced. Heretofore the graduates of the University of Pennsylvania have held a majority of positions as resident physicians at this hospital.

The result of the examinations held in the past week has been the continuation of this majority, and the fact that the examining board was made up of such conscientious men as Drs. R. G. Curtin, William F. Waugh, and Henry Chapman, representing, as they did, three of the principal schools of the city, is sufficient evidence that for once, at least, all competitors were put on an equal footing.

The result of the examination at Blockley Hospital for resident physicians was as follows: Women's Medical College of Pennsylvania, 3; Medico-Chirurgical College, 3; University of Pennsylvania, 13; and Jefferson Medical College, 1. The results of the other competitive examinations are as follows: Presbyterian Hospital, University of Pennsylvania 4; St. Agnes's Hospital, University 4; Howard Hospital, University 1, Jefferson 1; German Hospital, University 2, Jefferson 1; St. Mary's Hospital, University 3; Camden Hospital, University 2; St. Luke's Hospital, Bethlehem, Pa., University 2.

Lectures on Abdominal Surgery at the Chicago Polyclinic.—The recent special course in abdominal and pelvic surgery, by Drs. Senn, Fenger, Parkes, and Belfield, at this institution, seems to have met with general commendation among the physicians—one hundred and twenty-seven in number—who attended. At a meeting of the class held at the completion of the course, the following resolutions, presented by Dr. E. P. Cook, of Mendota, Ex-President of the Illinois State Medical Society, were unanimously adopted:

"WHEREAS, We desire to give expression to our appreciation of the successful and satisfactory manner in which the course has been conducted to its conclusion; be it, therefore,

"*Resolved*, That we would hereby convey to the Faculty and officers of the Chicago Polyclinic our thanks and appreciation of the discernment and skill that have conceived and executed a course demonstrative of the recent marked advances in the surgical treatment of abdominal and pelvic injuries and diseases.

"*Resolved, further*, That we are under special obligations to the several distinguished surgeons who, by their lectures and demonstrations have made this, as we believe, the best course in advanced surgery ever delivered in this country.

"*Resolved, finally*, That it is our deliberate conviction, that we have here in Chicago and in the West every requisite in skill and knowledge among teachers, and in abundance of clinical material, to qualify thoroughly all who would engage in the profession of medicine and surgery."

The course will be repeated by the same lecturers, on a more elaborate and complete plan, next winter

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM APRIL 29 TO MAY 5, 1890.

By direction of the Secretary of War, leave of absence for twenty-one days is granted RICHARD S. VICKERY, *Major and Surgeon*.—Par 17, *S. O. 103, A. G. O.*, May 2, 1890.

By direction of the Secretary of War, NATHAN S. JARVIS, *First Lieutenant and Assistant Surgeon*, is relieved from duty at Camp Wade, Kingfisher, Indian Territory, to take effect on the expiration of his present leave of absence, and will report in person to the commanding officer Fort Verde, Arizona Territory, for duty at that station.—Par. 12, *S. O. 102, A. G. O.*, May 1, 1890.

By direction of the Secretary of War, leave of absence for one month and fifteen days is granted JAMES C. MCKEE, *Lieutenant-Colonel and Surgeon*.—Par. 4, *S. O. 98, A. G. O.*, April 26, 1890.

By direction of the President, JOHN DE B. W. GARDINER, *Captain and Assistant Surgeon*, will report in person to Brigadier-General Wesley Merritt, President of the Retiring Board at Fort Leavenworth, Kansas, for examination by the Board.—Par. 4, *S. O. 99, A. G. O., War Department, Washington, D. C.*, April 26, 1890.

By direction of the Secretary of War, the ordinary leave of absence granted LOUIS A. LA GARDE, *Captain and Assistant Surgeon*, in Order No. 70, current series, Fort Assiniboine, Montana, is changed to a sick-leave; and the extension of said leave on surgeon's certificate of disability, granted him in Special Order No. 43, April 14, 1890. Department of Dakota, is further extended one month, on surgeon's certificate of disability.—Par. 5, *S. O. 97, A. G. O.*, April 25, 1890.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY, FOR THE WEEK ENDING MAY 3, 1890.

WOOLVERTON, T., *Medical Inspector*.—Detached from Navy Yard, Washington, D. C., and wait orders.

BEARDSLEY G. S., *Medical Inspector*.—Ordered to the Navy Yard, Washington, D. C.

HARVEY, H. P., *Surgeon*.—Detached from the "Ranger," proceed home, and wait orders.

HEFFENGER, A. C., *Passed Assistant Surgeon*.—Ordered to the "Ranger."

GAINES, J. H., *Surgeon*.—Detached from Hospital, Hot Springs, Arkansas, and granted sick-leave.

SPRATLING, L. W., *Assistant Surgeon*.—Ordered to Hospital, Hot Springs, Arkansas.

BOGERT, E. S., JR., *Assistant Surgeon*.—Ordered to the "Vermont."

OLCOTT, F. W., *Assistant Surgeon*.—Ordered for examination preliminary to promotion.

AUZAL, E. W., *Passed Assistant Surgeon*.—Detached from the "Yantic," and resume duty on board the "Galena."